

BALANCING A FINE LINE: DECISION-MAKING BY SUB-ELITE ATHLETES
ABOUT PLAYING THROUGH PAIN: A FOCUSED ETHNOGRAPHY OF
GYMNASTS, ROWERS AND SPEED SKATERS

by

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Abstract

Aim: To explore the factors associated with sub-elite athletes playing through pain in gymnastics, rowing and speed skating.

Methods: Five coaches, four athletes and three rehabilitation specialists were studied. Athletes were photographed during a practice before a competition and semi-structured interviews were conducted with all of the participants after that competition.

Photographs were used for photo-elicitation during the interviews. Interviews were transcribed *verbatim* and thematic analysis followed using NVivo™ software.

Results: Sub-elite athletes hold much of the control as to whether they keep playing through their pain or not. Three main themes related to playing through pain were identified. They are: “Listening to Your Body”, “Decision Making” and “Who Decides”.

Conclusion: When sub-elite athletes play through their pain, performance is affected in the short term and long-term consequences are possible. This study provides some insight into the contrasting forces that athletes balance as they decide to continue or to stop.

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Chapter 1: Introduction

Injury in sport is an unfortunate and stressful incident that can be accompanied by a variety of risks, consequences and outcomes (Wiese-Bjornstal, 2010). It can potentially jeopardize an athlete's career. At the sub-elite level, where athletes have the potential to compete in the Olympic Games or in a professional league, athletes may decide to play through the pain (physical discomfort) of an injury to maintain their status and remain in the running to make it to the top. High level athletes believe that pain is normal in sport participation and that they should train through their pain to be successful (Hammond, Lilley, Pope, Ribbans, & Walker, 2014a; Hibberd & Myers, 2013). Evidence exists that external sources of pressure, prompted by cultural beliefs, push athletes to adopt this perspective (Deroche, Woodman, Stephan, Brewer, & Le Scanff, 2011). Amongst others, parents, teammates, peers and fans will encourage athletes to ignore their pain even at the expense of creating further damage (Curry, 1993; Hammond et al., 2014a). The athlete's coach and rehabilitation specialist also present expectations with regards to return to play. This can set the stage for potential conflict and become increasingly stressful, especially when the timing of decisions to play through pain are critical. In a society with a strong culture of risk, it appears as though athletes are being socialized to perceive pain as a "part of the game."

When an individual struggles with an injury and is determined to play through the pain, there is the possibility that they are not allowing their body to heal as it should. Not only will this have immediate repercussions on the injury but it could possibly lead to long term disability (Wiese-Bjornstal, 2010; Hibberd & Myers, 2013; Simon & Docherty, 2014).

Purpose of Research

The purpose of this study was to explore the experiences of athletes, coaches and rehabilitation specialists to gain further insight into both the internal and external factors associated with playing through pain.

Previous studies have established that in the world of sports, it is culturally accepted to play through the pain of an injury (Deroche et al., 2011). Pain has been normalized to the point where athletes have reported being expected to ignore pain and to remain in the game despite the possible detrimental consequences associated with playing through pain (Simon & Docherty, 2014; Wiese-Bjornstal, 2010). However, athletes have also admitted to being personally willing to sacrifice their body for the game (Hammond et al., 2014a).

From an athletic therapist's perspective, the athlete's readiness to put themselves at risk, the existence of a culture encouraging this risk-taking behaviour and the possibility for long term health-related consequences raise concerns. While rehabilitation specialists may not have an influence on an athlete's competitive nature or the culture of risk they operate in, understanding the consequences of those factors on an athlete's physical well-being is definitely in their area of responsibility. Modulation of prevention and management strategies could facilitate pain and injury management in athletes. It therefore appeared worthwhile to investigate the concept of playing through pain.

Qualitative studies exploring the experiences of athletes who play through pain have been conducted in the past which points out an interest in this phenomenon. However, most of the published literature lacks methodologic quality leaving questions with regards to the relevance of the findings presented.

Further qualitative research is therefore required to explore the experiences of athletes playing through pain. Hibberd & Myers (2013) also suggested that studies examining the degree to which external factors, such as coaches, are involved in the phenomenon would be useful to research. In addition, a study conducted in 2007 suggested that participants' self-report should be examined to determine if it matches their actual behaviours with regards to injury in sport (Podlog & Eklund, 2007).

Consequently, this focused ethnography was aimed at exploring the experiences of rehabilitation specialists, coaches and athletes with playing through pain and at observing the athletes' behaviours, more particularly their pain behaviours, while they were playing through pain. Subsequent dissemination of the results among the athletic population will contribute to increased awareness on the topic and ideally motivate an improvement in injury management both on and off the field.

Research Question

What are the experiences of sub-elite athletes, coaches and rehabilitation specialists with playing through the pain of injuries?

Objectives. The objectives of this study were to learn from the participants...

- how athletes, coaches and rehabilitation specialists know that the athlete who is injured and in pain should stop practicing/competing,
- the importance athletes, coaches and rehabilitation specialists attribute to the possible consequences associated with playing through pain,
- who has the final say on an athlete's participation in their sport when the athlete is injured and in pain,
- how athletes communicate that they are in pain while training/competing, and

- if it is possible to observe pain behaviours in an athlete playing through pain.

Chapter 2: Literature Review

Prior to conducting this project, a systematic review of the qualitative literature on the factors associated with playing through pain was conducted to gather as much information on the topic as possible (Barrette, Dechman & Gilbert, 2016). A search of 3 databases and a thorough scan of the 1,842 articles that were generated from this search helped to shape the lines of interrogation for this study and to provide the ground work for this literature review.

This section covers some key definitions as well as the main concepts that emerged from the search of the literature on playing through pain. First, the main variable in this study; pain and the targeted population; sub-elite athletes are defined. Then, the research findings on risk taking behaviours and the culture of risk, playing through pain and pain behaviours are presented. Finally, the two concepts that were added to the study; photography as a research method and the involvement of coaches and rehabilitation specialists are linked to the literature.

Pain

Pain is understood to be an individual's experience, it is defined by that individual and then communicated outwardly according to how the individual has perceived it. (Craig, 2009). Pain literature is constantly emerging and evolving. To provide a clear and concise presentation of this concept, that is highly important in this study, the following definitions were based on the pain literature focused on sport injuries.

It is known that pain is a sensation triggered by the nervous system (Vadivelu, Urman, & Hines, 2011). Yet, pain remains a complex biological, physical, psychological and social concept. The most widely endorsed definition of pain, to this day, is that pain

is “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (International Association for the Study of Pain, 2005).

Pain is the most common symptom associated with an injury. Medical Subject Headings (MeSH) defines an injury as “damage inflicted on the body as the direct or indirect result of an external force, with or without disruption of structural continuity” (Medical Subject Headings, 2014). There are three classifications of injuries: acute, chronic and recurrent. Acute injuries are characterized by a single traumatic onset, a high force of impact and a short duration. Examples of acute injuries in sport include: strains, sprains, contusions and lacerations (Yang et al., 2012). Chronic or overuse injuries are described as being the result of repeated minor insults, which are not associated with a specific onset and which are longer in duration. Examples of chronic injuries in sport include stress fractures, bursitis and tendinopathies (Yang et al., 2012). Recurrent injuries are not presented with a common definition in the literature. Variances are found between the different descriptions that are available. In the field of sports medicine, a definition that researchers often adopt is the one elaborated by Fuller and colleagues (2006). They define recurrent injury as a reoccurring acute or chronic injury, which is of the same type and affects the same site as the initial injury. In addition, to be considered recurrent, they state that the injury must have occurred after the athlete was cleared from their initial injury and has achieved a full return to play (Fuller et al., 2006). This definition was the one taken into consideration when addressing recurrent injuries.

Gymnastics, rowing and speed skating, the sports explored in this study, all involve specific movement patterns and a higher occurrence of certain injuries. While

gymnastics involves the execution of a high impact, precise series of skills, speed skating and rowing both involve a repetitive motion that is performed as fast as possible with specific positioning. Gymnasts were shown to be more prone to acute injuries and bad landings were identified as the main cause of injury (Kirialanis et al., 2002). Common injuries mentioned in the literature include: sprains, strains, and growth plate fractures (Kirialanis et al., 2002, Wadley & Albright, 1993). Rowers were shown to be more prone to chronic injuries and repeated movement with poor posture or technique was identified as the main cause of injury (Hickey, Fricker & MacDonald, 1997). Common injuries mentioned in the literature include: tendonitis, stress fractures and mechanical low back pain (Hickey, Fricker & MacDonald, 1997, Smoljanovic et al., 2009). Speed skaters were shown to be almost equally prone to both acute and chronic injuries. Repetitive movement patterns combined with falls at a high velocity accounted for this distribution (Quinn et al., 2003). Common injuries mentioned in the literature include: sprains, strains, fractures, lacerations, concussions and mechanical low back pain (Quinn et al., 2003). The variation in type and severity of injuries from sport to sport will be considered during the data collection and data analysis as it will affect each athlete's perception and experience of pain.

No matter what the source, pain is a personal experience that is influenced by intrapersonal, interpersonal and environmental factors (Craig, 2009). While humans communicate states of distress to others, appraisal and assessment of pain remains a challenge (Craig, 2009). The literature suggests that care delivery is enhanced when the care giver is trained to recognize and interpret pain (Craig, 2009). As pain is an important part of sub-elite athlete training and competition, recognition and interpretation

of pain in athletes should also be of interest to coaches and rehabilitation specialists working with those athletes.

The Sub-Elite Athlete

Within the literature, there is some discrepancy as to how an elite versus a sub-elite athlete should be defined. The definition of the elite athlete will commonly overlap with that of the sub-elite and vice versa. For the purpose of this thesis, where sub-elite athletes were specifically targeted, both levels of athletes are clearly distinguished. The elite athlete was defined as “a world-class performer in any physical sport” (Dictionary of Sport and Exercise Science and Medicine, 2008). The sub-elite athlete was defined as an athlete with the potential to become a world-class performer in any physical sport. Therefore, the elite level is considered as the highest level of performance in a sport while the sub-elite level is considered as the second highest level of performance.

The sub-elite athlete was targeted because they are at the level where they are competing for national team status and aiming to make it to the Olympics. They have everything to win and everything to lose and are therefore more inclined to take all the necessary measures to achieve their goals, including playing through the pain of an injury (Curry, 1993; Safai, 2003). This makes them an ideal group of athletes to explore the topic of playing through pain amongst.

Risk Taking Behaviours and the Culture of Risk

Risk taking involves “knowing that there is a possibility of failure, but proceeding with the action anyway” (Donnelly, 2004, p. 31). Although the consequences associated with risky behaviours can be as significant as death, some humans seem to be driven to participate in risky endeavors no matter what. Biologists, psychologists and sociologists

have all attempted to elaborate hypotheses to explain what appears to be a pre-disposition for some individuals to engage in risk taking behaviours (Donnelly, 2004). Some internal and external factors associated with the phenomenon have been identified but a definite conclusion remains elusive.

In the world of sports, high level athletes have been shown to be ready to engage in risk taking behaviours (Curry 1993; Hammond et al., 2014a; Safai, 2003). Sub-elite athletes appear to be particularly prone to play through the pain of an injury (Curry, 1993; Safai, 2003). At this level, they have everything to win but also everything to lose and they have expressed that they are willing to ‘pay the price’ to achieve their goals (Curry, 1993). Sub-elite athletes are therefore frequently challenged to make the decision to continue to play in the presence of pain. The implication of internal factors influencing this behavior is scarcely discussed in the literature. More research is necessary to identify if internal factors such as personality, maturity, expectations, values and beliefs have an influence on this decision making process.

External factors associated with playing through pain have been addressed in qualitative literature. The athletes’ social framework, in particular, was shown to be a strong external influence with regards to their acceptance of the risks associated with pain and injury (Nixon, 1992). Part of this social framework is their sports network (“sportsnet”) that includes: coaches, managers, teammates, rehabilitation specialists, family members, peers and fans. These individuals reportedly will expect that athletes maintain their level of activity despite pain and injury and have thereby been linked to a culture of tolerance towards exposure to dangerous situations (Curry, 1993; Hammond et al., 2014a; Nixon, 1992; Safai, 2003). This culture was identified as the culture of risk

(Nixon, 1992), where athletes are socialized to perceive playing through pain as a positive experience. The culture of risk and the people who promote it are external influences on athletes as they make decisions about playing through pain.

Overall, the readiness of athletes to engage in risk taking behaviours explains their determination to play through the pain of an injury. In addition, their personal drive to prioritize the sport above all else appears to be fueled by this culture of risk.

Playing Through Pain

Playing through the pain of injury is a topic that is frequently addressed in the media. It seems to be particularly common in high level athletes. However, a limited amount of literature has explored the phenomenon of playing through pain and the factors associated to it.

Quantitative research investigating the topic has concentrated on assessing the frequency of athletes *playing injured* rather than playing through pain. Pain is subjective and this could explain why researchers have focused their attention on a variable, like an injury, that is more easily measured than pain. Yet, acknowledging the fact that pain is the most common symptom associated with injury (Beers et al., 2003), we have concluded that in most cases, athletes reported to have *played injured* were also likely playing through pain.

The main conclusion that is suggested by the quantitative literature is that a majority of athletes will play injured at least once in their career. In a study conducted by Nixon (1996), a survey was distributed to collegiate athletes and 94% of the respondents admitted to playing injured at some point during their career. In a similar study, elaborated by Simon & Docherty (2014), 232 former National Collegiate Athletic

Association (NCAA) Division One athletes were surveyed and 70% reported playing injured at least once during their career. Hammond and colleagues (2014b) assessed the prevalence of playing injured from a different perspective. Rather than asking athletes to recall if they had ever played injured, the frequency of English football league players playing injured was assessed through real time observation. The team physiotherapists recorded the incidence of players playing matches while injured. In 143 matches, 206 injuries were documented and there were 102 instances where athletes played with an injury. Therefore, in almost every game of the season, one player played injured. Despite the limited amount of quantitative research that has been conducted on the topic, findings show a high prevalence of athletes who will train or compete despite being injured.

Qualitative research that was conducted in the field aimed at exploring the experiences of athletes playing injured and taking the experiences of pain into consideration. Results presented in the qualitative literature suggest that some incentives for playing through pain and injury included: reaching goals and being successful (Curry, 1993), appearing strong in front of teammates and significant others (Pike and Maguire, 2003) and maintaining athletic identity (Hammond et al., 2014a). In addition, studies identified members of the athlete's sportsnet as the main individuals who pressured athletes to keep playing despite being injured and in pain (Curry, 1993; Hammond et al., 2014a; Young, McTeer, & White, 1994). Although these themes are repeated across studies, the lack of methodologic quality in the conducted research indicates that further research is needed to support these findings. This lack of methodologic quality was identified in a systematic review of the factors associated with playing through pain (Barrette, Dechman & Gilbert, 2016). A search of three databases, 1,842 articles,

generated only four studies that met the inclusion criteria and presented a moderate to high methodologic quality when evaluated by the Consolidated Criteria for Reporting Qualitative Research (COREQ) (Tong, Sainsbury, & Craig, 2007).

Although it would seem likely that playing through the pain of injury would lead to long-term consequences, a limited amount of research has been conducted in this area (Sabo, 2004). It is known that once retired, high level athletes are prone to experience debilitating conditions and functional limitations later in life (Donnelly, 2004; Simon & Docherty, 2014; Young et al., 1994). Former athletes were found to have a high prevalence of musculoskeletal conditions such as chronic pain, tendinitis, partial paralysis, arthritis and osteoporosis (Donnelly, 2004; Turner, Barlow, & Ilbery, 2002; Young et al., 1994). In addition, these individuals appear to be more inclined to develop psychological conditions such as anxiety, depression, fatigue and sleep disturbance (Simon & Docherty, 2014; Wiese-Bjornstal, 2010). Many retired athletes are also affected by other post-career conditions impacting their quality of life, functional autonomy limitations and abilities to perform activities of daily living. Such limitations tend to affect personal hygiene, eating, doing housework and completing work-related tasks (Simon & Docherty, 2014). Consequently, if former athletes in general were reported to experience these long term consequences, it appears reasonable to suggest that athletes who play through pain are at risk of a similar future.

Altogether, although there is a lack of literature on the topic, the studies that have assessed it report a high incidence of athletes playing through pain. In addition, the studies that identify themes associated with playing through pain, despite the lack of methodological quality, are consistent with each other. While the consequences brought

on by playing through pain are not highly discussed in the literature, some speculations on this concept can also be made. Foundations of the topic of playing through pain have therefore been established. However, with the goal of stimulating an improvement in injury management, more research is required to better understand the decision making process of the athlete playing through pain.

Pain Behaviours

The conceptual formulation of pain behaviours was advanced by Wilbert Fordyce in the 1970's. Fordyce's definition of the concept remains valid to this day and it puts forward that pain behaviours are visible and audible cues through which individuals present that they are experiencing pain (Fordyce, 1976). Examples of pain behaviours include: guarding, sighing, grimacing, taking medication and refusing to move (Fordyce, 1976). Pain behaviours can be communicative, protective or both. Communicative pain behaviours serve to share information about an individual's internal state, pain-related limitations, and need for help. These behaviours are displayed through facial expressions, body language and vocalizations (Sullivan et al., 2006). Protective pain behaviours serve to decrease the pain sensation (e.g.: limping) or to terminate the effect of a noxious stimulus (e.g.: withdrawal of limb from hot surface). While communicative pain behaviours can convey distress to observers without being protective in function, protective pain behaviours will always display that an individual is in pain in addition to serving protection purposes.

Different individuals were found to display pain behaviours on different levels and to favour communicative or protective pain behaviours. Multiple studies assessing pain behaviours and the variances among genders have reported that there is a significant

difference in the quantity of pain behaviours that are conveyed by males versus females. Women were shown to present more pain behaviours than men (Keefe, Dunsmore, & Burnett, 1992; Sullivan et al., 2006; Unruh, 1996). This was explained by the fact that women tend to be more expressive in nature than men (Sullivan et al., 2006). Research assessing differences between children with a cognitive impairment and children without a cognitive impairment found that the participants diagnosed with a moderate to severe cognitive impairment displayed more communicative pain behaviours than children with a mild cognitive impairment or no impairment at all (Duivenvoorden, Tibboel, Koot, van Dijk, & Peters, 2006; Nader, Oberlander, Chambers, & Craig, 2004). Different individuals therefore seem to communicate their pain on different levels.

Pain behaviours, like all behaviours, can also be thought of as either respondent or operant. Respondent pain behaviours arise from acute conditions and they are defined as reflexive behaviours which are controlled by specific antecedent nociceptive stimuli (Dickerson & Dolce, 1991; Fordyce, 1982). Operant pain behaviours are associated with chronic conditions and they are defined as learned behaviours which have been influenced by the consequences that resulted from the initial occurrence of the behaviour (Dickerson & Dolce, 1991; Fordyce, 1982). It is these pain behaviours that can be influenced by conditioning factors operating in the individual's environment (Dickerson & Dolce, 1991; Fordyce, 1982).

The fact that operant pain behaviours can be maintained through environmental reinforcement offers an explanation as to why sometimes individuals continue to display pain behaviours despite having healed from their injury. It also suggests that pain behaviours can be modified. Consequently, in a rehabilitation setting, where the main

goal is to decrease an individual's level of distress, it appears possible to use a behaviour change approach to treat an injury. Methods which are used to induce a behaviour change include: proper use of analgesic medication, exercising within limits deemed acceptable for the injury and actively teaching the affected individual to learn to recognize 'cognitive errors' (Fordyce, 1976; Patterson, 2005).

Altogether, when addressing pain behaviours, it is important to keep in mind that they serve different functions (communicative or protective). In addition, different persons will display their pain differently and pain behaviours will be more observable in some individuals than others. One must also be aware that pain behaviours can be modified and that a behaviour change approach can be considered in rehabilitation.

Pain behaviours in sport. While pain behaviours were shown to be valuable in assessing the pain experience of individuals with communication impairments (Cook, Roddey, Bamer, Amtmann, & Keefe, 2013; Van der Putten & Vlaskamp, 2011; Vervoot et al., 2007), a limited amount of research has been conducted to investigate the expression of pain in populations without communication impairment. In sports medicine, literature addressing the use of pain behaviours to assess an athlete's pain experience was not identified. However, athletes are constantly under the influence of factors favorable to operant conditioning. Two major factors they are subject to are the internal and external pressure to succeed (Hammond et al., 2014a; Nixon, 1993; Safai, 2003). Such factors induce the learning of certain behaviours, pain behaviours amongst others. Consequently, athletes could potentially display pain behaviours. Thus, to gather additional information on the experience of athletes playing through pain, it seemed

pertinent to observe if they do communicate pain through pain behaviours or if they try to hide or disguise their pain.

Assessing pain behaviours. Pain behaviours are assessed using semi-structured interviews, self-recording methods and observation. Semi-structured interviews involve having the participants recall the pain behaviours they believe they communicated within a certain time frame (Keefe & Smith, 2002). Self-recording is achieved through diary entries, surveys or questionnaires where participants record their pain behaviours on a regular basis (Hibberd & Myers, 2013; Keefe & Smith, 2002). Observation involves watching and analyzing the participants while they perform certain tasks or activities. It is the method researchers are increasingly relying on to assess pain behaviours (Keefe & Smith, 2002). Not only does observation provide a direct form of assessment but it was also found to be more accurate than self-report or self-recording methods. Indeed, participants appear to be imprecise at reporting their own behaviours and recall was shown to be prone to distortion of original facts (Deroche et al., 2011; Keefe & Smith, 2002; Sanders, 1983). Most of the research on pain behaviours in populations without communication limitations has been conducted on persons with chronic low back pain, arthritis, cancer and fibromyalgia (Buckelew et al., 1994; Follick, Smith, & Ahern, 1985; Fordyce, 1976; Keefe & Smith, 2002). Therefore, the most advanced observational models have been designed to address populations suffering from these conditions.

Although a variety of observation protocols on pain behaviours exist, most of them share common features. The observation session will typically involve solicitation of the participant to engage in actions that will elicit pain and trigger the person's pain behaviours. This process will usually be filmed to allow a better analysis of the pain

behaviours and a trained observer will be responsible for coding the different behaviours (Keefe & Smith, 2002).

In this study, an innovative method of observing pain behaviours was used. An observation protocol involving photography was elaborated. Photography is a common means of data collection in qualitative research but it does not appear to have been used to assess pain behaviours in athletes.

Photography as a Research Method

Photography was first adopted as a means of observation in anthropological research (Collier, 1967). However, researchers from other fields suggested that it should not be limited to the study of foreign cultures (Curry, 1986). Amongst others, it appeared as an appropriate means to observe the behaviour of athletes in their environment (Curry, 1986). Given that athletes are used to performing in front of crowds and occasionally, if not frequently and being photographed or filmed, photography was not perceived as an invasive means of collecting data (Curry, 1986). In addition, according to the Canadian Federal law, Canadians have the right to “freedom of thought, belief, opinion and expression, including freedom of the press and other media of communication” (Canadian Charter, 1982, s 6(2) (b)). Therefore, there is no restriction to taking photographs at a public event, such as a sports event, as long as the pictures are not published or sold where a breach of privacy may be considered. Photography thus seems to be an accessible means of observation in a sports setting.

No disadvantages to using this method have been identified. However, one precaution was brought up. When one of the goals is to use the photographs to engage the participant during the interview, the quality of the image becomes particularly important

as the quality of the discussion seems to be directly related to it (Collier, 1967).

Photographing athletes in action can therefore become quite challenging and time consuming for the researcher. It thus appears important for the photographer to have some experience at taking pictures of the targeted population and working with their equipment. To address this challenge, prior to collecting data, pilot studies were conducted to test aspects of the study, including photography.

In this study, athletes were photographed in action and the photographs were used during the interviews to focus the discussion; a method called photo-elicitation. The protocol for photography in the sports setting is described under the methods section and the use of photo-elicitation in a focused ethnography is addressed in the methodology section.

Involvement of the Coach and Rehabilitation Specialist

Although the athlete is at the core of the concept of playing through pain, many other factors are influential with regards to this topic. Amongst others, the sports participant's entire "sportsnet" will shape their thought process and resulting actions. This network includes teammates, coaches, rehabilitation specialists, family, peers and fans (Nixon, 1994; Wiese-Bjornstal, 2010).

In the occurrence of an injury, at the sub-elite level, two of the individuals who will have a significant role in the process of decision making regarding return to play are the coach and the rehabilitation specialist (Nixon, 1994). The coach is the main actor in training the athlete to be the best they can be. The rehabilitation specialist is the person who will work with the athlete to make them as physically healthy as can be. There are a

variety of rehabilitation specialists who work with athletes including: athletic therapists, physiotherapists, osteopaths, chiropractors and massage therapists.

This study targeted the specialists who most commonly work with athletes and who are often called upon to help with decisions about return to play after injury, that is; the athletic therapist, physiotherapists and sports chiropractors. Gathering the perspectives of these individuals on the phenomenon of playing through pain shed light on what their beliefs are about having an injured athlete maintaining their level of activity despite being in pain. In addition, it provided insight on how the decision making process of returning to play in a situation of injury occurs.

Dyads were formed between coaches and athletes. Interviewing two individuals who collaborate to maximize the athlete's performance provided the opportunity to gain a well-rounded impression of the factors associated with playing through pain.

Ideally, a triad would have been formed and the rehabilitation specialist would have been included. Given the fact that recruiting three individuals from the same "sportsnet" within a restricted amount of time is a challenging task, this study was limited to a dyad. Consequently, to be included, the rehabilitation specialists recruited to participate in this study were not required to have treated a participating athlete. Their experience with a specific athlete was not assessed. Rather, they were interviewed with the goal of gaining more insight on their general experience dealing with sub-elite athletes playing through pain.

Assessing perspectives. Perspectives are commonly assessed through semi-structured interviews. This method was used in the study. Semi-structured interview guides were developed for the athlete, the coach and the rehabilitation specialist to

explore their experiences with playing through pain and identify the factors associated with this phenomenon. Photo-elicitation was also used as a means to stimulate conversation with the different participants.

Chapter 3: Methodology

This study was conducted using a focused ethnography design. The purpose of this study was to explore the experiences of athletes, coaches and rehabilitation specialists to gain further insight into the factors associated with playing through pain. Conducting a focused ethnography involves observing participants and hearing their voices to get a better understanding of their experiences. A research approach like the focused ethnography is designed such that the researcher collects data in “a natural setting sensitive to the people and places under study” and “address[es] the meaning individuals or groups ascribe to a social or human problem” (Creswell, 2013, p. 43-44). Focused ethnography was therefore deemed appropriate to the proposed study.

Focused Ethnography

Qualitative research is situated in the naturalistic paradigm and therefore the researcher is considered as the instrument in the study. The researcher as an instrument is achieved through the use of an interpretive, naturalistic approach such as one-to-one interviews and observations. This study was conducted using an ethnographic approach.

Ethnography “focuses on an entire culture-sharing group” and describes the common values, beliefs, behaviours and language of this group (Creswell, 2013, p.90). Focused ethnography shares the same foundations as the ethnographic approach but the researcher using this methodology aims to create a better understanding of the experiences of specific concepts in a selected population’s life (Cruz & Higginbottom, 2013). In this case, the researcher aimed to create a better understanding of the experiences of members of the athletic population with regards to playing through pain.

Focused ethnography is a common approach in healthcare research because it is both time and cost efficient (Morse, 1990). In fact, unlike conventional ethnography, focused ethnography does not require the researcher's immersion and participation in the participants' environment. Instead, this design involves a researcher that has background knowledge of the contextual situation to be explored and is familiar with the population to be studied prior to conducting the research. Sampling in focused ethnography is therefore treated differently than in the conventional ethnography. Only a purposeful sample of individuals who appear to fit the inclusion criteria of the study may be studied and a pragmatic solution may still be achieved (Morse, 1990). The population as a whole under investigation does not have to be included. Table 1 was extracted from the English version of Hubert Knoblauch's work (2001) and depicts additional differences between the conventional and the focused ethnography.

Table 1

Comparison between conventional and focused ethnography

Conventional ethnography	Focused ethnography
Long-Term Field Visits	Short-Term Field Visits
Experientially Intensive	Data/Analysis Intensity
Time Extensivity	Time Intensity
Writing	Recording
Solitary Data Collection and Analysis	Data Session Groups
Open	Focused
Social Fields	Communicative Activities
Participant Role	Field-Observer Role
Insider Knowledge	Background Knowledge
Subjective Understanding	Conservation
Notes	Notes and Transcripts
Coding	Coding and Sequential Analysis

Given that a research project for a Master's thesis has to be conducted in a limited amount of time with limited financing, a focused ethnographic approach was a suitable option. In addition, the goal of this study, which was to explore a specific population and get a better understanding of a concept, was coherent with the intent of this approach. Both researchers also had experience as competitive athletes, coaches and rehabilitation specialists and knowledge of the three sports being studied which provided them with the necessary background to explore the topic of playing through pain in an athletic population using this approach. Both the principal researcher and co-researcher were familiar with the three sports and could bring the three role perspectives to the study. The principal researcher was most familiar with gymnastics while the co-researcher was most familiar with rowing. The researchers were aware that their knowledge of the different sports would influence their outlook on the study. However, given that they were both involved with data collection and analysis they were in a position to complement each other's knowledge if needed.

Theoretical Perspective

Focused ethnography is informed by a social constructivist perspective. Social constructivism involves seeking understanding of the meanings individuals ascribe to specific concepts (Williamson, 2006; Creswell, 2013) and furthers understanding of how perspectives are constructed. Using a constructivist perspective means that open-ended interview questions are used to capture the participant's construction of meaning (Creswell, 2013). Researchers using a constructivist perspective consider the complexity of the participants' views and assumes they have been shaped through their social interactions (Creswell, 2013). To better understand the contextual factors that may have

had an impact on the participants' construction of meanings, social constructivist researchers are encouraged to obtain knowledge of the environment they are studying (Creswell, 2013). The researchers (as described above) were very familiar with both the sports and the different roles being studied. The social constructivist researcher is also required to acknowledge that they cannot dissociate from their background knowledge and that this will shape their interpretation of the topic to be explored (Creswell, 2013). In social constructivist work, the realities reported by the researcher are therefore said to be *co-constructed* by the researcher and the participants (Creswell, 2013).

The goal of the social constructivist is to seek understanding of the meanings individuals ascribe to specific concepts. This goal was congruent with the goal of this study which was to seek a better understanding of the meanings athletes, coaches and rehabilitation specialists attribute to different factors involved with playing through pain. In addition, the criterion that the researcher hold background knowledge on the topic to be explored was congruent with what was expected of the researcher leading a focused ethnography. As mentioned, both researchers were not only familiar with the roles of the different participants but also with the three sports being studied. A social constructivist perspective was therefore congruent with focused ethnographic methodology and the methods used in this study, including photo-elicitation (Creswell, 2013).

Photo-Elicitation

Photo-elicitation is a technique used in interviews where photographs are referred to in order to stimulate responses from the interviewee in discussion of the topic. Photo-elicitation was shown to prompt insight that would not have been offered through questioning only (Collier, 1967). In fact, the visual aid was found to be a beneficial

adjunct to the interview as it elicits detailed responses specific to the topic of inquiry (Curry, 1986).

Like photography as a means of observation in research, this method was originally used in anthropological work exploring different concepts in foreign cultures (Collier, 1967, Curry, 1986). Once again, after recognizing the value of this approach, researchers from other fields sought to integrate it to their methods.

In the world of sports, it appeared as an interesting means of recalling specific feelings in athletes or encouraging them to provide details they might not have thought of without the visual stimulus (Curry, 1986). In fact, advantages of using photo-elicitation include provoking emotions that are not otherwise raised by discussion as well as eliciting more honest responses (Collier, 1967). It was claimed that photographs stimulated immediate reactions that make it harder for a participant to lie (Collier, 1967). No significant disadvantages to using this technique in the interview were identified. One challenge that was put forward is selecting the photographs that will stimulate an appropriate discussion with regards to the topic of inquiry (Curry, 1986). Photo-elicitation thus appeared as a pertinent method to adopt in sports-related qualitative research.

Moreover, photo-elicitation is a qualitative method that is congruent with focused ethnography. As it was previously defined, focused ethnography is a means of studying shared experiences and practices in a specific population, allowing them to be observed in the context in which they occur and thus promoting the understanding of particular behaviours (Morse, 1990). Through the use of photo-elicitation, observed behaviours which have been captured in photographs are brought to the interview and the context in

which they occurred is made more accessible to the participant which opens up to richer discussion around their experiences with playing through pain. Presenting the photographs during the interview also reminds the participant of the researcher's familiarity with their sport and training environment. Photo-elicitation is therefore a direct way of bringing together the two major components of a focused ethnography which are observation and self-report.

In this study, up to ten pictures were selected to be presented to the interviewee to prompt the discussion of certain topics. The photographs conveyed a range of emotions from what appeared as pain to what did not. As it was stated, the visual stimulus was used to stimulate additional feedback on the topic. In addition, using the photographs to stimulate data collection optimized contextual validity through triangulation.

Chapter 4: Methods

Sampling and Sample

As it was mentioned in the methodology section, in focused ethnography a purposeful sample of individuals who appear to fit the inclusion criteria of the study may be studied and a pragmatic solution may still be achieved (Morse, 1990). A review of focused ethnographies conducted in the field of healthcare suggested that a sample size of approximately 15 participants would be appropriate to reach a satisfying level of depth in the results (Gagnon, Carnevale, Mehta, Rousseau, & Stewart, 2013; Graham & Connelly, 2013; Kilian, Salmoni, Ward-Griffin, & Kloseck, 2008). A satisfying level of depth is said to be achieved when additional sampling would not provide more pertinent information related to the research question (Creswell, 2013). Based on these findings, the study included a purposeful sample of 12 participants; four athletes, five coaches and three rehabilitation specialists. Although this number is not the same as the target, it was agreed that the sample was sufficient for the purpose of this study as a satisfying level of depth was achieved.

Participants and Inclusion Criteria

To be included in the study, athlete participants were: sub-elite athlete, male or female, 10-25 years of age, participating in the sport of gymnastics, speed skating or rowing and currently recovering from an injury. The age range was decided based on the early performance peaking age in gymnastics versus the older performance peaking age in rowing and speed skating. Only athletes taking part in individual sports were included because we believed that there are additional factors that influence the decision to play through pain that are experienced by team sports athletes, and this would have added

another level of complexity that we chose not to include in this study. The sports of gymnastics, speed skating and rowing were specifically targeted to optimize the recruitment process, given that there is a fairly large pool of Eastern Canadian sub-elite athletes in these sports. Also, only musculoskeletal injuries were taken into consideration. Concussions, for example, were not considered in this study.

The goal of forming dyads between the athletes and the coaches implied that the coaches and athletes to be recruited were working together. In addition, to be included in the study, the coaches were required to have a National Coaching Certificate Program level three as well as at least five years of experience coaching their sport.

Inclusion criteria for the rehabilitation specialists were: that they were licensed practitioners in their field of practice and that they had at least five years of experience working with athletes. These healthcare professionals were also required to have worked with athletes in at least two of the sports to be studied. Together, the recruited practitioners had complementary experience working with the sports so that all sports were addressed.

Recruitment Strategies

Coaches were recruited first and then participated in athlete recruitment. The coaches were recruited through a mass email. The email was sent via the Provincial Sport Organization of our target sports who used a mailing list to connect high performance coaches in Nova Scotia. Speed skating, gymnastics and rowing clubs in Nova Scotia were also emailed directly to boost recruitment. Once coaches contacted us to show interest in participating in the study, a document describing the study was sent to them. The coaches were then asked to share this document with all their sub-elite athletes who were

currently injured. Athletes who were interested in participating in the study found all the information necessary to contact us in the document. When both the athlete and the coach agreed to take part in the study and signed the required consent form (for athletes who were minors, their parent/guardian signed the consent form), the data collection process was initiated. Rehabilitation specialists were also recruited through a mass email that was sent to all practitioners who were identified to work with sub-elite athletes in the sports under study. Contact information was sought out through word of mouth, Canadian Sport Center Atlantic, yellow pages and online searches. Recruitment of rehabilitation specialists was done independently from athletes and coaches, but the same steps as described above were used to inform and get consent from these participants.

Data Collection

The study was designed so that an injured athlete would be studied while training for a major event (competition or time trial) and also after competing in that event. Data related to pain behaviours was collected through photography during a practice prior to the major event and assessed as additional data. Then, one, semi-structured interview was conducted with each: athlete, coach and rehabilitation specialist, after the athlete had competed in the major event. The interviews explored the multiple perspectives of the experience of the athlete playing through pain.

Observation and photography. Pain behaviours were assessed using observation and photography of the athlete in action. This was accomplished during a practice session prior to a major event (e.g. time trial or competition). On average, the sessions lasted 2h. The first half of the session consisted in observing the athlete training. This initial observation familiarized the researchers with the environment, the athlete's

behaviour, their interaction with coaches and other athletes and informed the researchers as to the optimal location for photography. The second half of the session was dedicated to capturing stills of the athlete training. Facial and body expressions were captured for use during subsequent interviews.

A Canon EOS Rebel T3 camera was used for the photography portion of the study. The settings were adjusted manually by the researcher to accommodate to the environment the photographs were taken in and multiple frames per second were taken. Capturing a specific behaviour is challenging, therefore, taking a large set of photographs and then having the chance to select the most pertinent ones was an ideal option. As many photographs as deemed necessary were taken. After the observation session, the pictures were analyzed and up to ten frames were selected to be used for photo-elicitation during the interviews. Photographs appearing to convey pain and absence of pain were selected in order to prompt a well-rounded discussion with the participants. These photographs were chosen and agreed upon by the principal and co-researcher.

Throughout the data collection process, field notes were taken to document details about observation, comment on decision making processes and record any other thoughts relevant to the research project. These notes were taken so they could be referred to during the data analysis process if needed. Field notes were particularly important when taking photographs. The location, time of day, settings applied and any other details about the photography session were pertinent information to log.

Interviews. The perceptions and experiences of athletes, coaches and rehabilitation specialists related to the phenomenon of playing through pain were gathered through semi-structured interviews. A semi-structured interview guide was

prepared for each group of participants. These guides are presented in Appendix A, B and C. The interviews were audio recorded by two recorders, one was the main recording tool and the other was used as a backup. The interviews lasted 25-75 minutes and were held either in room 425 of the Forrest Building which is located on the Carleton Campus of Dalhousie University or at a preferred, sound attenuated location suggested by the participant. The principal researcher led the interviews using the interviewer guide. The co-researcher was also present for each interview session, in her supervisory capacity. To minimize intrusion, the co-researcher was seated outside of the interviewee's field of vision and spoke infrequently. The participants consented to having two interviewers in the room. Some interviews took place at times where both researchers were not in the same location therefore, in two cases, the co-researcher was connected to interview via Skype and in one case the principal researcher conducted the interview via Adobe Connect. Follow-up interviews were not conducted because it was not deemed necessary.

Table 2 below depicts sample questions for the three groups of participants involved in the study. The questions were formulated by the researcher.

Table 2

Sample Questions for Interview Guide

Participant	Questions
Athlete	Tell me about your experience with injuries in sport.
	How do you feel about playing through pain?
	How do you decide to keep going or stop?
	What is your understanding of the long term consequences of playing through pain?
	Tell me about any pressure you may have felt to continue playing despite being in pain?
Coach	Tell me about your role in managing the injuries suffered by your athletes.
	What do you feel about athletes playing with pain?
	How do you know when one of your athletes is in pain?
	What is your understanding of the long term consequences of playing through pain?
	How do you know when it is time to take an athlete out of the game?
Rehabilitation Specialist	Tell me about your experience treating sub-elite athletes.
	Tell me about your role in managing the injuries suffered by your athlete patients?
	What is your understanding of the long term consequences of playing through pain?
	What do you feel about athletes playing with pain?

Data Analysis

All of the data were analyzed by the principal researcher and the co-researcher. Debriefing with committee members was also undertaken when necessary to optimize the quality of the analysis. Data analysis occurred concurrently with the data collection process to guide recruitment and interview sessions.

The audio recordings from the interviews were transcribed *verbatim* by the principal researcher and with the help of a research assistant. The principal researcher in the focused ethnography is encouraged to complete as much of this task on their own as it increases proximity with the data (Denzin & Lincoln, 2005). Fictitious names were given to the participants in unique identifiers to preserve confidentiality.

The transcripts were then coded in an iterative process. Both the principal researcher and the co-researcher coded the data independently. Meetings then followed to compare and discuss codes. Coding was done using the software NVIVO™ and the data

was coded for themes relating to playing through pain. More specifically, the coding process followed the approach elaborated by Roper and Shapira (2000). This approach consists in coding for descriptive labels, sorting for patterns, identifying the outliers, generalizing with constructs and theories, and memoing through reflexive remarks (Roper & Shapira, 2000). The themes were then reviewed and grouped together (Figure 2) to depict the main findings of the study and shape the final analysis.

Trustworthiness

In qualitative research, researchers must ensure the trustworthiness of their data rather than reliability and validity. The criteria for trustworthiness include: credibility, transferability, dependability and confirmability (Shenton, 2004). To ensure trustworthiness, the project followed the guidelines offered by the COREQ checklist (Tong et al., 2007). This tool is endorsed by the Cochrane collaboration and it provides a framework for reporting complex qualitative data in a rigorous and comprehensive manner (Tong et al., 2007). The components of trustworthiness components included in the COREQ checklist include: presenting the question guide(s), describing the coding strategy and conducting participant checking. Appendix D presents the checklist. Verbatim transcription of the interviews is not addressed in the COREQ Checklist but it was performed to optimize accuracy of the data.

Ethics

The thesis proposal was submitted to the Dalhousie Research Ethics Board for review and approval. Elements of the ethics component included: informed consent, withdrawal, participant confidentiality and anonymity.

Informed consent. To participate in the study, all the participants were asked to provide written informed consent except for the participants under the age of 14 years old who were asked to provide written informed assent. In the case of participants under the age of 19 years old, a parent or legal guardian was also asked to provide written informed consent. Assent and consent forms are presented in Appendix H, I and J.

Withdrawal. All participants were informed that they had the right to withdraw from the study at any point without any consequences. It was also outlined in the consent form that if a participant did not withdraw from the study, it would be assumed that they were providing ongoing consent to use their information.

Confidentiality. Confidentiality of the participants was assured. All personal information provided by the participants was not shared with anyone who was not involved with this study. Participant information was stored on a private computer and restricted from any public access. In addition, fictitious names were given to the participants prior to coding. Other names or specific participant details that could allow identification will not appear in the thesis or any publication or presentation derived from the thesis.

Anonymity. This study involved face-to-face interviews with the participants. Consequently, anonymity could not be guaranteed.

Knowledge Translation

The present study was aimed at providing further knowledge primarily to rehabilitation specialists but also to coaches, parents and athletes on the topic of playing through pain. The projected means of achieving this include: sharing the results with the participants involved in the study, submitting the results of the thesis for publication, and

presenting the results at conferences. A poster that reported on the systematic review described earlier has been presented at Dalhousie Pain Research Day, and a second poster, containing the main themes of this study has been submitted for the Canadian Pain Society 2017 conference. Finally, we propose to create an accessible product, such as a brochure, to communicate the results with the athletic population. Ideally, a seminar discussing playing through pain and the main findings of the study will also be elaborated. This seminar could be presented in different sports clubs in the region and at events such as the Annual Canadian Athletic Therapist's Association Conference.

Chapter 5: Findings

Sample

In total, 12 participants were recruited to participate in this study. The sample includes five coaches (one female), four athletes (all female) and three rehabilitation specialists (one female). Overall, seven different coach-athlete dyads were formed. Figure 1 below presents the participant sample.

In speed skating, one coach and one athlete were recruited. In gymnastics, two athletes and two coaches were recruited and both coaches worked with each athlete. In rowing, one athlete and her two coaches were recruited. The three rehabilitation specialists all had different professional backgrounds, none worked with any of the athletes interviewed. One is a physiotherapist, one is a chiropractor and one is an athletic therapist. None of the participants dropped out of the study. Each participant was given a code for sport (SS=speed skating, G= gymnastics, R=rowing), and role (A=athlete, C=coach, R=Rehabilitation Specialist)

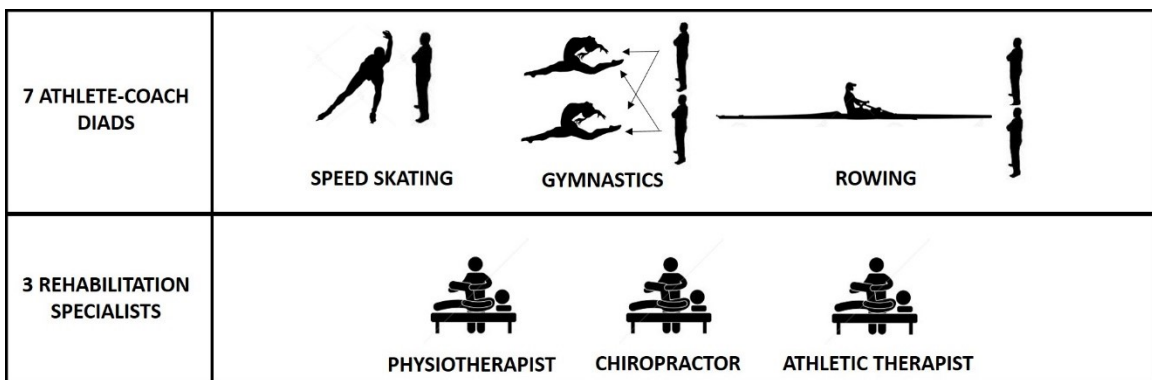


Figure 1. Participant Sample. Description of the athlete and coach dyads

SSA01. SSA01 is a 17 year old female speed skater from Québec. She has been involved with speed skating for the past 12 years. She just recently started skating at the sub-elite level and joined the senior competitive circuit. She now races against girls who

are older and more experienced than she is. However, she remains focused on her goal which is to make it as far as she can. She dreams of taking part in the Olympic Games.

A few months prior to the interview, SSA01 fell into the boards during a competition and sprained a ligament in her cervical spine. The injury kept her out of training for three months and she missed three competitions. This injury was the athlete's first major injury. Upon participating in the study, she had just recently started training again and she had participated in her first provincial competition since being injured the weekend before the interview.

SSC01. SSC01 is a male speed skating coach from Québec. He is a former competitive speed skater who now works as a physical education teacher and as the head coach for his local speed skating club. SSC01 has been involved with coaching for the past nine years. As the head coach, he is in charge of planning and overseeing the training for each group at his club. He is also assigned his own group of athletes. He currently coaches the high performance skaters.

SSC01 is quite interested in the education part of coaching. His aim is to share his values with his athletes to help them develop a work ethic that can be applied in their sport and also in their daily life. His coaching philosophy also advocates self-management in his athletes. He guides them to use the resources available to them.

When it comes to injury management, SC01 has established a clear protocol to be followed with any acute trauma. With regards to chronic injuries, all of his athletes are referred to the appropriate rehabilitation specialists for treatment and he defers to them when an athlete is training with an injury.

GA01. GA01 is an 11 year old female from Nova Scotia. She has been practicing gymnastics for the past eight years. She currently trains at the national level, but has not yet made the national team. She is a full time student and she is in the gym five days a week for a total of 25 hours. A week prior to the interview, GA01 took part in her first National Championships. Her goal is to make the national team within the next few years and compete in the Olympic Games.

When she was interviewed, GA01 reported that she was not injured. However, when volunteering to participate, she identified herself as injured and playing through pain. She therefore appeared to be exploring a fine line between being sore and being in pain; a concept which will be discussed later.

GA02. GA02 is a 12 year old female from Nova Scotia. She has been practicing gymnastics for the past nine years. She currently trains at the national level but has not yet made the national team. She is a full time student and she is in the gym five days a week for a total of 25 hours. This athlete's goal is to make it to senior national gymnastics. She also dreams of competing in the World Championships and the Olympic games.

GA02 suffered two injuries which considerably affected her training this season. She strained her hip flexor and she fractured the growth plate in her wrist. Her hip injury prevented her from competing in a sub-elite competition and because of her wrist injury she competed in only two of the four events at Nationals.

GC01. GC01 is a male gymnastics coach from Nova Scotia. He is a former national level gymnast. He graduated from university with a degree in business but only worked briefly in this field. GC01 began coaching while he was at university and soon

found himself coaching full time. He has been a full time gymnastics coach for over 35 years. GC01 currently works with national level gymnasts at a gymnastics club where he is also the competitive program director. Over the course of his career, GC01 has coached athletes competing in 30 National Championships. His dream is to coach an athlete who competes at the Olympic Games.

This coach's philosophy is that gymnastics is not only a sport, it is a discipline. He wants his athletes to develop in a fun atmosphere but he also wants them to understand that if they want to excel at gymnastics, they have to put in the required work. Given that GC01 is in the gym with his athletes for many hours every week, he works to build a strong relationship with each of them where everyone has a mutual understanding of each other's goals and expectations.

With regards to injury management, GC01 has a good relationship with one rehabilitation professional to whom he refers his athletes. However, his athletes are also free to seek treatment from any rehabilitation specialist they want. He believes that the most important part of injury management is to establish good communication with the specialists who treat his athletes so together they can establish the optimal management plan for the athlete.

GC02. GC02 is a female gymnastics coach from Nova Scotia. She has been involved with gymnastics for 45 years. She has never been a gymnast, but was a dancer for many years. GC02 considers being a gymnastics coach the best possible job. She really enjoys the artistry and the biomechanics of the sport. She also likes that she can be her own boss.

GC02 strives to be a personal motivator. She respects the difficulty of the sport and recognizes the challenge for her athletes to be so young and perform in a sport that is so demanding. Although she can be quite orderly and strict, her primary goal is to be a coach that the athletes feel comfortable coming to. She strongly encourages communication and believes that knowing your athletes is the key to a successful coach-athlete relationship.

When it comes to injury management, GC02 is very involved with the emotional aspect of physical injuries. She has integrated a sport psychologist into the group of specialists that the athletes can seek treatment from and she works closely with him. She believes that psychology plays an important role in every athlete's development, injured or non-injured and that mental health is too often overlooked in sport.

RA01. RA01 is a 21 year old female rower from Nova Scotia. She has only been practicing the sport of rowing for the past two years but she has been a competitive athlete for over 10 years. She was previously involved in track and field, gymnastics, volleyball, and basketball. A major concussion put an end to her career in contact/ high impact sports and re-directed her to rowing. RA01 currently competes at the sub-elite level as a lightweight rower. She trains twice a day every day. She is also a full time university student and works three different jobs. Although she is fairly new to rowing, RA01's long term goal is to make it to the Olympics. In the meantime, she is focused on qualifying for as many National competitions as possible.

RA01 has suffered from many injuries as an athlete. Aside from her concussion she also tore her hamstring and sub-luxed her fibula. Most recently, she developed bursitis in both of her shoulders and dislocated one of her ribs. She said that she does not

let these injuries stop her from training but she has definitely had to learn to adapt her practices according to her functional limitations and pain. At the time of the interview her schedule was particularly loaded. She had just competed in a provincial regatta and was about to leave for a national competition. She works closely with a physiotherapist and a chiropractor who guide her through her rehabilitation.

RC01. RC01 is a male rowing coach from Nova Scotia. He has been involved with rowing for over 30 years both as an athlete and a coach. He currently works with high performance lightweight female rowers. He also takes part in developing the masters and para-rowing programs.

RC01's coaching style advocates working with a long-term athlete development model. He is very invested in his team. However, he expects the same investment from his athletes.

With regards to injury management, RC01 will frequently refer to health care professionals. He has good communication with them and their professional assessment of the situation guides him in coaching his injured athletes. He likes to have a good understanding of what he is dealing with as a matter of functional limitations.

RC02. RC02 is a male rowing coach from Nova Scotia. He has also been involved with rowing for over 30 years. As an athlete he made it to the national team. He is now a full time provincial coach working with high performance athletes.

RC02's coaching philosophy encourages building a strong relationship with the athletes he works with. He highly respects his athletes and the hard work they put into rowing.

RC02 uses baseline measures to identify limitations in his athletes' training. When one of his athlete's demonstrates changes in posture, biomechanics or technique he will investigate the possibility of an injury. With regards to injury management, RC02 always refers his athletes to healthcare professionals for treatment and guidance.

RS01. RS01 is a female physiotherapist from Nova Scotia. She has been working with athletes for almost 20 years. She has been involved with hockey, football, gymnastics, rowing, volleyball as well as track and field sub-elite athletes but her main focus is now on canoe-kayak. She works closely with the competitive canoers and kayakers ranging from the development athletes to elite athletes. She is involved with them both on the water and in a physiotherapy clinic where she is a co-owner. As a former athlete and coach in canoe-kayak, RS01 brings a considerable knowledge of the sport to her professional interactions with her patients.

RS01 believes that her role as a physiotherapist is to be an adviser to her athletes. RS01 also strongly encourages team work in the rehabilitation of an athlete. She will often refer to the strength and conditioning coach, the nutritionist, the psychologist, the physiologist or the coach to optimize an athlete's treatment plan.

RS02. RS02 is a male sports chiropractor from Nova Scotia. He has only been practicing for three years but he has rapidly acquired experience in the field working with a variety of athletes including gymnasts. RS02 covers sports events and he treats athletes in a clinic. The main sports he works with are rugby and hockey.

RS02 states that his role as a chiropractor is to work with his athletes so that they can train and perform optimally. To do this he will gather as much information as he can on the sport and its biomechanics. He will go and observe his patients while they are

training if he feels it might be helpful. RS02 is also keen to provide education to prevent injuries.

RS03. RS03 is a male athletic therapist from Québec. He has been working in the field for over 10 years now. He has been involved with a variety of athletes ranging from recreational to professional and elite. He is currently the head therapist at a college where he oversees both the practice/game coverage and clinical rehabilitation of the varsity athletes. He also works with the province's high performance wrestling team and owns a private clinic where he treats the common population and athletes from other sports such as gymnastics and rowing.

As a head therapist, RS03 reported that one of his major roles is to manage a team of athletic therapists and ensure that there is good communication among these therapists, the athletes and the coaches. Every injured athlete has to be assessed by him and he is the one to make the final decision of whether or not an athlete returns to play. When treating athletes, RS03 also believes that patient education is one of the most important rehabilitation modalities

Themes

All of the athletes in this study reported having played through pain at least once in their athletic career. The principle finding of the study is that sub-elite athletes walk a *fine line*, as depicted by the model below in Figure 2. They achieve a balance point among the many competing forces, and ultimately hold much of the control as to whether they keep training or competing while being injured. The participant interviews revealed three main themes related to the fine line of playing through pain. They are: "Listening to Your Body", "Decision Making" and "Who Decides". "Listening to Your Body"

revolves around the idea that athletes need to learn by listening to their body to determine if what they are feeling is soreness or pain. “Decision Making” about whether to keep training, adapt the training program or stop altogether depends on some immediate, injury/function-related factors. Further analysis of the interviews revealed the following sub-themes of “Decision Making” that represent the different counterforces athletes reported experiencing as they were decision-making: Impact & Consequences, Support & Pressure and Dreams & Goals. The third theme, “Who Decides”, refers to who makes the decision of taking an athlete out of play and it is related to the dynamics of the athlete/coach relationship. Pain behaviours were also noted to come into play with regards to the “Who Decides” theme. The three main themes are further described below.

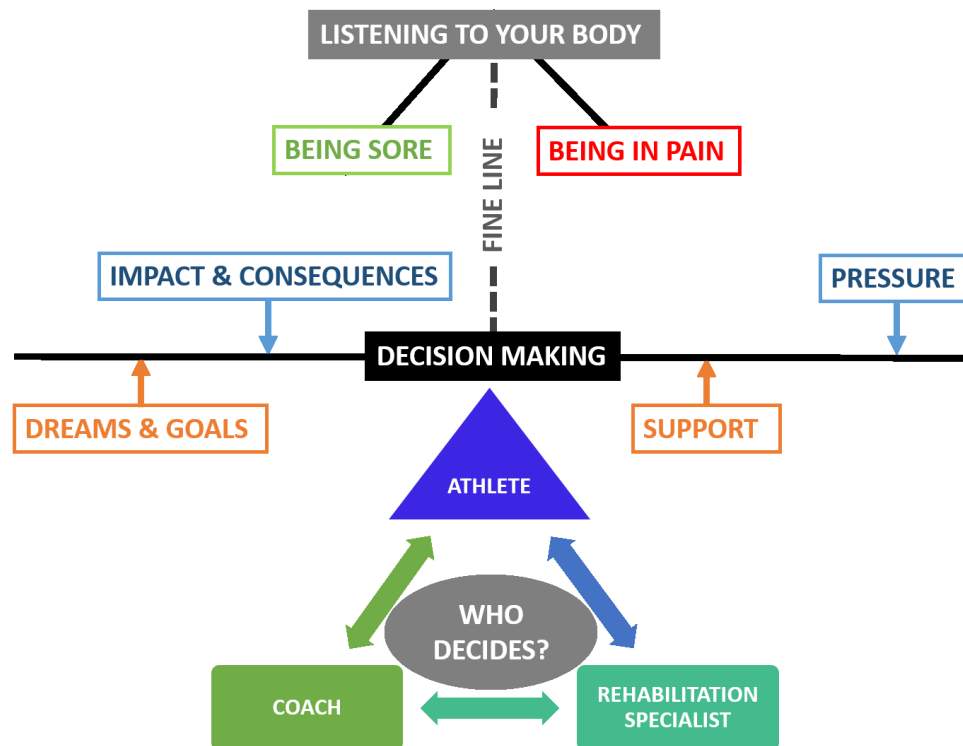


Figure 2. Themes. Model depicting the relationship between the three main themes related to playing through pain.

Listening to your body. This theme represents how athlete participants described some of their internal processing and decision making around whether or not to play through their pain. When they were considering if they should stop training/competing or keep going, many participants spoke about the difficulty of knowing the difference between being sore and being in pain. This challenge was nicely represented by GA01 who at one point identified herself as playing through the pain of an injury, but later was unable to point to a specific injury when being interviewed. She reported that "my wrist hurts sometimes, my back hurts sometimes, my neck hurts... I could say everything hurts sometimes but it's not even that bad." She added that "it could just be a little pain here a little pain there but it isn't that Ow! Ow! Ow! Pain."

SSA01 also described the struggle of knowing whether the pain she was feeling was from being sore from training or from being injured. She mentioned that "sometimes you can think it's nothing and then you wake up the next day and you're not able to move." To be able to identify if she was truly injured she stated that "you have to listen to your body as much as possible." However, she stressed that even as you get better at tuning into what your body is telling you, there is always that grey zone that is tough to figure out. She added that she finds rehabilitation specialists are a good resource to help manage the underlying issue when she is unsure of the signals her body is sending. For example, when she started skating again after taking time off to heal her injury, her neck still caused her some discomfort and that concerned her. Her chiropractor reassured her by teaching her that "a sprain, it will always remain fragile" so the lingering pain she was feeling was normal especially this early after the trauma.

RA01 suggested that one can become better at understanding this fine line between being sore and being in pain. She stated that “growing up I would keep pushing through the pain and I wouldn't be able to distinguish what's pain and what's just pushing yourself. Now that I'm a bit older I know when I'm hurt or when I'm just hurting.” She believes that the more you get to know your body, the less of a grey zone there is.

RC01 stated that even though he thinks that most of his athletes know their bodies well, they are still constantly testing that “fine line between being broken and staying healthy.” The athletes in this study confirmed this statement by stating that they would challenge their body's limit before deciding to stop or keep going. For example, GA01 reported that she will only ask for a break if “it's constantly hurting and I have to stop and rub it and rub it and it still doesn't go away and it hurts every little movement.” And GA02 mentioned that she only considers stopping “once I can't move anymore” or “when I'm in tears.” SSA01 had a different experience as when she injured her neck, she did *not* want to stop training. Her physiotherapist recommended that she stop but she kept going to practice until it became, as she stated, “unbearable.”

Decision making. All of the participants described how challenging it is to decide whether or not they should play through their pain. As the model in Figure 2 portrays, the sub-themes of “Decision Making” represent the different counterforces that athletes experience as they are making this decision: Impact & Consequences, Dreams & Goals and Support & Pressure.

Impact and consequences. All the athletes explained that playing through their pain had a particular impact on their **training**. For example, GA02 recalled that when continuing to train despite a growth plate fracture in her wrist, she avoided putting all her

weight on it to protect it and to decrease the pain that this movement caused, thus changing her skills practice. In RA01's case, she mentioned that because of her injuries she needed to adjust her training or else she felt as though her body was "falling apart" and therefore she was different than the other athletes on her team. For example, she stated that at one point "I was really hurting and I just kept on ending practice early", and bike instead of row, to compensate for the training she was missing. She also described specific exercises that she did before and after her practices to manage the pain she experienced because she continued to train injured. In comparison, GA01 reported that she had not needed to alter her training when she experienced pain, instead she took breaks to ice her injuries when necessary. With regard to SSA01, when she started training again after taking time off to recover from her cervical sprain, she mentioned it being a long process. She stated that "getting back to it, it took her longer than everyone else." The fact that "she struggled with her race tactics" was especially frustrating to her.

The athletes also mentioned that playing through their pain had an **emotional impact**. They alluded mainly to intensely personal feelings of stress and frustration. For example, GA02 recalled that the feeling of stress about not being able to compete in the Nationals was much greater than the actual feeling of pain. She stated that she kept thinking about "not going to Nationals" versus "my wrist hurting really bad." RA01 discussed how training with her injuries was frustrating because she constantly had to adapt her practice according to how she was feeling that day. SSA01 stated how at first, she felt like no one understood what she was going through. In addition, she talked about the struggle of accepting her injured status when she decided to take a break and rest her injury because initially she said "I didn't wanna [sic] stop."

The speed skating athlete participant described how being injured and trying to play through her pain had an impact on her **relationships** with her teammates and her coaches. When SSA01 first got injured she tried to keep practicing. When she could not keep playing through her pain and stopped she felt judged by her peers. She knew that they were talking behind her back and saying that she was faking. She felt betrayed by teammates who were some of her closest friends. And so, upon returning to training, she admitted that her relationship with them “really isn’t the same.” Although she had similar feelings of being judged by her coaches, she spoke directly with them about how their attitude towards her injury affected her, and reported that as a result their relationships are good.

Despite the fact that it is well known by athletes, coaches and rehabilitation specialists that athletes are at risk of long term consequences if they play through the pain of an injury, all the participants in this study recognized the challenges for them of understanding how to manage this particular situation. For example, SSA01 stated that it is difficult to recognize long term consequences of playing through pain until you have significantly injured yourself and you have actually suffered from the consequences of playing through the pain of that injury. She said that had she better understood the consequences of continuing to train through her injury, she would have stopped when her physiotherapist advised her to. She said that now she has been through it, “it’s better for you to take one week completely off from skating or from your sport than wanting to continue that week and have to stop for a month after that because you really injured yourself.” GC01 had a similar opinion; he mentioned that most of his athletes have barely been injured so they are not fully aware of what is at stake when they play through

their pain. RS02 also supported this statement by saying that athletes often think they are invincible and that their injury will not become an on-going issue. He has spoken with older or retired athletes about the consequences of having played through the pain of an injury, and they often say "Oh my goodness... If I only knew!" RS03 also thinks that his athletes "don't fully understand their bodies yet and don't know the repercussions [of playing through pain]." He said that he has patients that are "dealing with some long term effects from... you know, 40 year olds, 30 year olds... people who had broken hands or torn tendons that you know they said 'I sucked it up and went back' and that causes dysfunction later on in their life."

Despite this difficulty, some participants spoke of their awareness. RA01 spoke of her fear that her rib injury will eventually affect her back, it "kinda [sic] freaks me out", because "you use your back in everything." However, she trusts that her physiotherapist will assist her in gauging her body's limit so she does not reach that point.

SSC01 affirmed that, as a coach, his athletes' health is his priority. To him, the long term consequences of playing through pain outweigh the impact that deciding to stop might have on the career of an athlete. GC01 also stated that when possible, he prefers giving his athletes the time they need for their injuries to fully heal and thus prevent further issues.

All the rehabilitation specialists reported using an approach focusing on preventing long term consequences that can be brought on by playing through pain. RS01 stated that it is her job to inform athletes of their injury prognosis if they play through their pain. RS03 said that his role is to make his athletes aware of potential damage if they push through the pain of an injury. He believes that by having them "look at those

long term consequences”, rehabilitation specialists can help athletes understand that it might be time for them to stop. With his patients, RS02 likes to ask “What really is the benefit of playing through that pain?” He believes that when there are obvious consequences to playing through the pain of a specific injury athletes ought to take care of it now and decrease their chances for further damage. Like RS01 and RS03, he also thinks that his role is to highlight the potential risks of playing through pain and help the athletes weigh the risks and benefits.

Dreams and goals. All of the participating athletes mentioned that their goal was to make it to the Olympics. Competing in qualifying competitions that might determine their entry to the next level was therefore very important for them. Consequently, when an athlete was injured and needed a break from training, the timing of upcoming competitions often dictated when the break from training would occur. For example, when GA02 was asked why she did not stop training because of her injury sooner she responded that it was because “I had Nationals coming and I really wanted to do it.” She asked her doctor if she could compete “now and then rest it later” and he agreed to this plan. Accordingly, she trained through the pain of her injury, with certain modifications to her skill set, to manage her pain as much as possible and she competed in Nationals. Similarly, RA01 mentioned that during a competition “if it's to the point where I know that I would usually stop, but I still have races, I'll just tape them [her shoulders] up and race.” She will push herself to her maximum ability every race and deal with the outcome afterwards. Interestingly, this is the athlete participant who was the most concerned about long term consequences.

When the rehabilitation specialists spoke of this issue, they revealed that they understood the athlete's perspective. RS02 described situations when the importance of long term consequences were downplayed. He talked about working with high performance athletes "where it becomes a challenge is if it's a championship game, a very important game and they sustain an injury and you try to provide some type of first aid: compression, ice, hold it down, tape it, pin it, brace it to let them play through it whether or not that's a smart choice." He recalled that he was treating a javelin thrower that had to throw a certain distance to get an NCAA scholarship. He described it as "a hundred and thirty thousand dollar throw." RS02 treated that athlete to complete this throw by "adjusting the training, adjusting the treatment and keeping it within a reasonable amount that he is able to throw without aggravating it to the point of causing significant damage." RS03 also had a similar story where a star football receiver was playing for an NCAA scholarship when he broke his hand during a playoff game. For the athlete, there was no question that he *would not* return to play given the importance of the game. However, in this case, given the severity of his injury and the inevitable long term consequences, the medical team did not agree to let him keep playing.

When there were no major competitions or games coming up, most of the time the athletes rested as a preventative measure. RA01 reported that in a practice setting, when she feels that her shoulder injury is painful and it limits her training, she will stop and make up for her time off the water with a run or a bike ride. She believes that in this case, as compared to during a competition, pushing through her pain "is not worth it." GC01 also stated that if there are no competitions in the near future he prefers to "slow down and heal [the athlete's injury]."

Pressure and support. Most of the athletes who took part in the study admitted putting a lot of pressure on themselves. RA01 conceded that her desire to succeed could sometimes impact her judgement. She confessed to doing things that, in the moment, she felt were necessary for her to achieve her goals but ended up being more detrimental. For example, she mentioned catching herself “pushing harder than I should be during a taper” even though both her coaches and physiotherapist had recommended a decrease in volume with specific performance and rehabilitation targets in mind. She is therefore aware that she has to learn to manage her energy and not get overly worked up thinking about her race outcomes. SSA01 also shared that she felt more pressure to perform since she had started competing in a new age category. It was for this reason, amongst others, that she did not want to stop training when she first injured herself. As she said “I would go see my physio, he would stop me, but I would still go [to practice].”

In some cases, the athletes’ family members were also identified as sources of pressure. By wanting the athletes to succeed, family members indirectly pressured them to keep playing through their pain. For example, SSA01 stated that when dealing with her injury, her parents were her biggest pressure. GA02 also reported feeling some pressure from her parents when they encouraged her to keep training through her pain. From the coach’s perspective, GC02 mentioned that she believed that one of her injured athletes; “... wasn't training for herself. She was training for her mother.” SSC01 made the same point when he said that: “I often see skaters that are there because that’s what their parents want.”

However, parents and other family members were also identified to be very supportive. Interestingly, although SSA01 identified her parents as her biggest source of

pressure, she also recognized them as two of her biggest supporters. She explained that when working out again after her injury her parents joined the gym as well so they could accompany her in getting back to physical activity, and admitted that “that really helped me.” She also mentioned that her sister helped her a lot by being a good listener. The fact that her sister had been a speed skater and that she had injured herself in the past made her easy to talk to. GA01 also identified her parents as being very supportive. She said that she could always talk to them and that they would always listen and never tell her to stop complaining when she addressed being sore or being in pain.

The athletes also recognized their coaches as being supportive when they were injured. Although GA02 and RA01 supposed that their coaches were frustrated with them at times because they were constantly adapting their training to how they were feeling, they also felt that they could tell them when they thought they had reached the limit of pushing their injury.

In some cases, the culture of risk was also identified as a source of pressure. The participating athletes admitted playing through their pain because they felt that it was expected of them. RS02 stated that “the bravado is certainly there”, and “there's a lot of positive reinforcement for that type of behaviour.” For example, RS03 mentioned that when an athlete plays through their pain; coaches, teammates and fans will often “applaud that inner grind of that athlete.” The fear of being identified as weak in a society where toughness is praised therefore appeared to affect the decision making process as well.

Who Decides? Who decides whether an athlete should keep going or stop when they are training with an injury was shown to depend on the involvement of pain

behaviours as well as the dynamics of the relationships between the athlete and the coach, the athlete and the rehabilitation specialist and the coach and the rehabilitation specialist.

Pain behaviours. Although the athletes discussed the concept of listening to their bodies, one of the objectives of this study was also to explore if coaches and rehabilitation specialists were capable of reading their athletes' pain messaging. More specifically, we were interested in knowing whether these participants thought it was possible to observe pain behaviours in an athlete who is playing through pain and if these behaviours were really subconscious actions or athletes willingly communicated that they were in pain. To do this, we presented each athlete participant with the five photographs, which are presented in Appendix K, of themselves and asked them to interpret them. Their coaches were presented the same photos. The rehabilitation specialists were presented with a collage of photos of the different athletes and asked to state which photographs they thought portrayed an athlete in pain. The degree to which pain behaviours are involved when an athlete plays through pain is important because it is a form of communication between the athlete, coach and rehabilitation specialist, and will have an impact on who decides whether the athlete should stop or keep going.

When asked, all of the participants agreed that it was possible to identify pain through the athletes' non-verbal communication. GC02 stated that in general, she thinks her athletes' body language communicates a great deal. She believes that if you know your athletes you will be able to identify when they are compensating or working below their threshold due to pain and when you need to check in with them to discuss whether their training should be adapted. SSC01 was also of the opinion that if you get to know your athletes, you develop the ability to read their non-verbal behaviours. While he

reported mainly focusing on changes in facial expressions he will also look for subtle cues in their technique such as functional limitations, which could indicate that they are in pain. Coaches therefore appeared to rely a lot on perceptible changes in their athlete's demeanor to know when they should inquire about an injury. As previously mentioned, they identified apparent decrease in function as a major indicator of an underlying issue. However, GC01 stated that "some of them don't like to let on and they don't speak", therefore you have to observe them when they do not expect you to be watching them to catch on certain cues. In addition, RC01 indicated that you should not only rely on the athlete's non-verbal to identify potential injury because he thinks that "sometimes we may be miss the indicators that we shouldn't be missing."

Through the use of photo-elicitation the athletes were able to recall how they were feeling at the moment the photographs were taken. When looking at the stills of herself in action, RA01 pointed out that "when my face is probably the most calm, is when I'm actually more in pain" and "when I'm grimacing it's because I can feel my technique going, I just got passed or the race is almost over and I'm tired." She explained that she was taught to hide her pain because she was told that demonstrating weakness can give your opponent an edge in a race. However, she believes that despite her efforts to avoid displaying facial expressions of pain, her coaches are able to identify when she is in pain through her body language or through her mood swings. More specifically, she said that they will notice it when "I don't respond to coaching as I normally would" and then they will investigate what is wrong. The other athletes responded similarly when looking at their pictures. In most photographs where they appeared to be in pain, they did not identify themselves as in pain. GA01 supported the idea that coaches should not really

rely on her facial expressions to know when she is in pain because her grimace when she misses a skill is very similar to her grimace when she is in pain.

With regards to rehabilitation specialists, RS01 believes that reading your athletes is a skill that can be developed by getting to know them. RS02 also stated that when you do not know the athletes you are working with, it is more challenging to identify pain behaviours as you are not familiar with their normal behaviours. He stated that: “knowing them is very beneficial because you watch them perform and you can tell if they're hesitant, hesitant to hit, hesitant to shoot harder, hesitant to run faster... and you can recognize that pretty quickly.” Subsequently, it becomes easier for him to recognize if an athlete should be taken out of the game for further evaluation. This was confirmed when the rehabilitation specialists reviewed the photographs in the interview as they were not always able to correctly identify when an athlete was in pain and when they were not. RS03 works on the field a lot and he also thinks that it is possible to identify when an athlete is in pain through certain behaviours. Although he does think that observable pain behaviours trigger the questioning of whether the athlete should be doing what they are doing or not, in most cases, he does not think that these non-verbal expressions can relate the severity of the issue and that a call can be made from observing them.

Relationships.

Both coaches and rehabilitation specialists stated that building a relationship with the athletes you work with is essential. SSC01 mentioned that getting to know his athletes is the first thing he focuses on. He believes that a good coach develops a relationship of trust with his athletes and to do this “you have to show interest in them.” RS02 supported this statement by saying that to optimize your work with athletes “knowing them and

knowing their lives is important.” RC01 also thought that taking the time to sit down and talk with your athletes once in a while was essential. These participants identified that building a relationship with their athletes appears to make them more at ease to come up to them and discuss how they feel about their injuries.

All the athletes reported having a good relationship with their coaches. GA01, GA02 and SSA01 mentioned being particularly close to their coaches given that they have been working with them for at least seven years. Despite being fairly new to the high performance program and its coaches, RA01 also claimed having a good relationship with her coaches. She said that “they’re probably the two most approachable coaches I’ve ever had and I’ve had *many* coaches growing up.” All of the athletes also mentioned that they felt comfortable going up to their coaches and talking to them about their pain when they needed to adapt their training or take a break.

The athletes also reported they had a good relationship with the people in charge of their rehabilitation. In most cases, they did not see these professionals on a daily basis and therefore mentioned that they did not communicate with them as openly as with their coaches. Also, rehabilitation specialists indicated that it was their role to talk to the athletes and try to gather information on how they are feeling that could help them with their rehabilitation. RS03 reported that in a varsity setting athletes are seen almost on a daily basis, leading to the ability to build a strong rapport with each athlete. According to him, a strong bond with your athlete allows you to have a better reading of the situation and gaining the athlete’s trust optimises their rehabilitation.

With regards to the relationship between coaches and rehabilitation specialists, in most cases, it appeared to not be very developed. For example, SSC01 mentioned that he

rarely speaks to the professionals who work with his athletes. Most of their communication is done through email and through the athlete. Similarly, RC01 and RC02 said that they usually get the information from their athletes. Despite this, all of the coaches reported relying on the rehabilitation specialists to make the final call regarding their athletes' return to play. GC01 affirmed that "I wouldn't make that call myself." GC02 said that "I leave it up to the people that they go see, the professionals." SSC01 mentioned that "as long as they haven't seen a professional I don't let my athletes step onto the ice." Only then, informed by the rehabilitation specialist's prognostic, coaches will decide to stop athletes from practicing or from competing.

From the rehabilitation specialist's perspective, RS02 and RS03 both mentioned that when you work with a group of athletes you can develop a relationship with their coaches but when you work with athletes just for an event it is not really possible. Therefore, when working on the field, both RS01 and RS03 reported having the final say on whether an athlete can stay in the game or not. With his medical team, RS03 stated that: "regardless of whether the athlete wants to go and the coach is willing to go, and we see something wrong, we can make that decision to stop them from stepping on the field." In contrast, when they see athletes in the clinic, both RS01 and RS02 felt that their role was more to guide the athlete in making a decision, rather than making the decision for them.

Final say. Overall, when the pain appeared to be inflicted by a more traumatic injury, the medical personnel seemed to have most of the power on the decision making process of whether an athlete should keep going or not. When the pain appeared to be due to a more chronic injury, the athlete presented as ultimately responsible to make this

final decision. The athletes claimed that they will often reach out to their rehabilitation specialist for guidance but in the end as GA01 stated, they are the ones to decide whether they can “fight through this pain” or they’re “not really okay.”

Chapter 6: Discussion

Previous studies have established that in sports, it is accepted that an athlete would play through the pain of an injury despite knowing that by doing so, there could be an immediate negative repercussion on injury recovery, as well as the possibility of long term disability (Hibberd & Myers, 2013; Simon & Docherty, 2014; Wiese-Bjornstal, 2010). This culture of risk dominates sport in popular culture, advertising and media coverage. Athletes are exposed to these expectations as they are initiated to sport, and it continues through to the sub-elite level when they are competing for national team status, targeting the Olympics and have everything to gain and everything to lose. There are only a small number of studies that have been conducted to understand *why* athletes play through the pain of an injury despite their awareness of the potential consequences. In each sport studied, there are protocols that assist rehabilitation specialists and coaches to decide about return to play after injury. This study was designed to better understand the phenomenon of playing through pain, with the expectation that it could help the development of evidence-based approaches for injury prevention and management in sport.

This study is unique in that it explored playing through pain from three different perspectives, that of: the athlete, the coach and the rehabilitation specialist. It also included an observation session which provided data to explore coach and rehabilitation specialist perspectives on athlete's non-verbal display of pain as they played through the pain of an injury.

The findings of this study are consistent with existing qualitative literature. We found that both internal and external factors motivate athletes to play through their pain.

More particularly, these factors appeared to act as counterforces as the athletes made the decision to keep training/competing or to stop. This discussion will therefore revolve around this primary finding that athletes are constantly negotiating a fine line when they are experiencing pain. First, the balance between being sore and being in pain will be discussed. Then, the contrasting forces that act on athletes as they decide to continue or to stop training or competing will be addressed. This will be followed by the discussion of the involvement of pain behaviours when an athlete plays through pain. Finally, the dynamics of the relationships between the different members of the established triad will be examined.

Is it Soreness or Pain?

All of the participants addressed the challenge of differentiating being sore and being in pain. The challenge of making that decision was first recognized when GA01 identified herself as playing through the pain of injuries during the recruitment process, but was unable to point to a specific injury when being interviewed. According to Malcom (2006), who has studied playing through pain in young athletes, “little distinction is made between minor body aches associated with rigorous physical exertion and more serious pain that signals the onset of a potentially debilitating injury” (p. 497). However, the oldest athlete (RA01) in this study (21 years old), mentioned that she believes that with age and experience athletes come to better understand their body and that there is less of a grey zone between being sore and being in pain.

The literature suggests that, in fact, the developmental stage as well as the psychological maturity of an individual affects their perception of pain (Broome, 1985; Twycross, 1998). A study conducted by LaFleur and Raway (1999) assessed the ability

of participants aged 8-19 years old to distinguish “ache” from “hurt” from “pain” and found that most children and adolescents were challenged with differentiating hurting from being in pain. The data also suggested that previous experiences with pain seemed to have an influence on the perception of pain intensity. These findings could explain why GA01 reported playing through pain but was unable to identify a specific injury that provoked her pain. Having only been injured seriously once in the past, she could still be in the process of differentiating aching from hurting from being in pain. Another consideration is the fact that these athletes are training and competing at very high intensities. At the sub-elite level, in all three sports, athletes push themselves very hard all the time. In rowing and speed skating, athletes routinely are training for extended periods under anaerobic conditions, pushing their own limits, in fact, experiencing pain at the end of a piece can be used as an effort indicator for the athlete “they're training at a such a fine line between... being broken and staying healthy” (RC01). And, their fitness also continuously changes. Athletes need to keep making the ‘right’ decision, but their frame of reference is not static.

When comparing their results to those of a similar study conducted with adults (Gaston-Johansson, Albert, Fagan, & Zimmerman, 1990), Lafleur and Raway (1999) suggested that although it seems that by age 15, children are socialized into common understandings of aching, hurting and being in pain, the experience of pain in children and adolescents would not be much different from that of adults. This could explain why even the oldest athletes in this study, who appeared to have a better understanding of injuries and pain, were nonetheless challenged by deciding if they were sore or in pain. In fact, other than saying that exposure to injury increases their awareness of their body’s

limits, the participants could not identify a clear method to learn how to navigate this fine line between being sore and being in pain.

Contrasting Forces

All of the athletes described how challenging it is to decide whether or not they should play through their pain. This decision-making process was influenced by different contrasting forces that the athletes experienced as they were playing through pain. These contrasting forces are: Support versus Pressure and Impact & Consequences versus Dreams & Goals.

Support versus pressure. Previous studies on playing through pain mainly addressed the negative pressure athletes are subjected to when they are injured. However, this study shows that athletes are also supported by the people in their environment. The main actors in the athletes' support/pressure system will be discussed.

Athletes themselves. The athletes' narratives in this study clearly described the ways that they pressured themselves to play through their pain. The literature on this topic reveals that multiple factors will fuel this internal pressure experienced by athletes. Studies have established that maintaining an 'athletic identity' is highly important to athletes and that playing is central to doing this (Brewer, Van Raalte, & Linder, 1993; Hammond et al., 2014a; Malcom, 2006; Pike & Maguire, 2003). In addition, athletes who complain of being in pain are often stigmatized (Curry, 1993; Malcom, 2006). Hence, athletes will pressure themselves to keep going despite being in pain, so as not to affect their athletic identity. Higher level athletes have also mentioned they felt that it was their duty to 'play' and therefore could not take time off when in pain. They believed that if they continued to train/compete despite being in pain they proved to their coaches and

other athlete peers that they were committed to their sport (Hammond et al., 2014; Malcom, 2006; Pike & Macguire, 2003). The athletes' desire to be successful was shown to contribute to the pressure they put on themselves as well (Curry, 1993; Hammond et al., 2014a; Roderick, 2006). In the case of sub-elite athletes more particularly, being successful was presented as necessary to reach their goal of making it to the next level. The idea of male athletes putting pressure on themselves to play through pain to prove their masculinity is also present in the literature (Curry, 1993; Young & White; 1994, Young & White, 1999). However, all the athletes who took part in our study were females therefore this aspect was not addressed.

Although the athletes in this study recognized that they put significant pressure on themselves to keep training/competing despite being in pain, most of the factors that contributed to this behavior appeared to be externally driven. Amongst others, the culture of risk that the athletes develop in, seems to have a considerable impact (Malcom, 2006; Nixon, 1994). The findings from this study suggest that athletes put pressure on themselves to keep going as a means of seeking the approval of their sportsnet (which includes: family, coaches, rehabilitation specialists, teammates, peers, etc). Three key players in the sportsnet of our participants are discussed next as well as the culture of risk.

Family. Pressure from family members with regards to playing through pain is scarcely addressed in the literature. This study found that parents, in particular, would at times put pressure on their child to keep training/competing despite being in pain. Both GA02 and SSA01 affirmed that they felt pressure from their parents to push through their pain to make it to an important competition. However, in most cases, family members

were found to be supportive towards the injured athlete as described by SSA01, RA01 and GA01.

Coaches. Along with other important influences on athletes, coaches are involved in decision making about the athlete continuing to train/compete when they are in pain (Curry, 1993; Hammond et al., 2014a; Nixon, 1993). However, the athletes participating in this study did not identify their coaches as a source of pressure with regards to playing through pain. This discrepancy can most likely be attributed to the fact that most of the existing studies on playing through pain were conducted with team sport athletes. In team sports, performance reflects directly on how well a coach is doing their job. The coach's statistics make their reputation. Consequently, a coach will want their best players in the game, at all times, to be as successful as possible. It therefore makes sense that a coach of a team sport may be more prone to encourage athletes to stay in the game despite being injured. In individual sports, coaches' contracts are usually not on the line if their athletes do not excel. For this reason, these coaches would typically not be expected to put as much pressure on their athletes to perform.

Rehabilitation specialists. The literature presents rehabilitation specialists as being sources of pressure more often than sources of support with regards to playing through pain (Curry, 1993; Roderick, Waddington, & Parker, 2000). However, in most studies, the rehabilitation specialists work for the team the athletes play for (Hammond et al., 2014a; Roderick et al., 2000). The fact that their efficiency at keeping their athletes in the game directly affects their reputation as professionals could explain why these rehabilitation specialists might be tempted to put more pressure on their athletes to play through their pain. One participant in this study, RS03, works with the sports teams at a

college. He mentioned that coaches will put pressure on him to have injured athletes back on their line-up and that athletes were often concerned that they would be benched by him. As he has the final say on when an athlete can return to play these factors weigh in on his decision-making process.

In this study, the athletes all described the rehabilitation specialists providing their care as being supportive when they were injured. In addition, they mentioned being able to come to mutual agreements on continuing to train/compete despite being injured. The athletes all sought treatment from professionals in private clinics where the rehabilitation specialists did not have a responsibility towards their team/club and did not necessarily have the final say with regards to the athletes' return to play. These factors could explain why these rehabilitation specialists appeared to be more supportive.

Culture of risk. The readiness of athletes to engage in risk taking behaviours such as playing through pain was shown to be influenced by the culture of risk (Curry, 1993; Hammond et al., 2014a; Nixon, 1992; Safai, 2003). The culture of risk represents the social framework that encourages athletes to play through their pain and injuries. This culture of risk implies that playing through pain is associated with qualities that are sought for in an athlete such as dedication and toughness (Nixon, 1992).

The findings of this study revealed that in some cases, the athletes played through their pain because they felt that it was expected of them. However, coaches and rehabilitation specialists appeared more aware of the positive reinforcement that there is for this type of risky behaviour than the athletes. According to a study conducted by Safai (2003), the culture of risk seems to be dominant in the athlete's decision making process of whether to play through pain or not. Yet, she also shares the idea of there being a

‘culture of precaution’ that comes into play. The culture of precaution is associated with the emergent acceptance and tolerance of pain and injury in the world of sports. Her findings indicate that a negotiation of both seems to happen when the athlete, the coach and the rehabilitation specialist address the management of the athlete’s injury. The culture of precaution was not recognized as a theme in this study. Nonetheless, the athletes’ lack of acknowledgement of the culture of risk as well as their mention of their coaches, rehabilitation specialists and family members being quite supportive and understanding towards their pain and injury could indicate that their decision-making process was indeed influenced by this culture of precaution.

The studies investigating the culture of risk have mainly been conducted with team sports. In our study the impact of the culture of risk was present but it was not as strong as expected. It would be interesting to see if this is really the case or if the impact of the culture of risk in general is tapering.

Impact & consequences versus dreams & goals. Athletes described another set of forces that influenced their decision making. These involved on the one hand, considering the impact and consequences of continuing to train/compete and these thoughts were contrasted by the athlete’s dreams and goals.

Impact & consequences. Playing through pain (and stopping training/competing because of pain) had an emotional impact on the athletes as well as an impact on their relationships and training. Mainly negative emotions were associated with playing through pain. The athletes from this study reported being stressed and frustrated. This is similar to other published studies. Other negative emotions such as irritation, denial,

bitterness (Young & White, 1999), fear, doubt (Curry, 1993) and anxiety (Turner et al., 2002) have also been reported.

One participant in this study mentioned how taking time off after being injured and not continuing to play through her pain had a negative impact on her relationship with her coaches and her teammates. The impact of playing through pain on relationships specifically, does not seem to be addressed in the literature. However, studies do mention how athletes have played through their pain to avoid being judged by coaches and teammates (Curry, 1993; Hammond et al., 2014). Not wanting to change the way they are perceived and treated by these people suggests a possible impact on their relationships with them if they do not continue to train/compete while injured.

Playing through pain was reported to have an impact on the athletes' training as well. In fact, in this study, functional limitations while training/competing seemed to have the greatest impact on deciding whether or not to keep training/competing. Decline in performance, particularly, appeared to dictate when it was time to stop. Previous studies have also addressed the significant importance of decline in performance for athletes who are playing through their pain (Hammond et al., 2014a; Madrigal, Robbins, Gill & Wurst, 2015).

Both short term and long term consequences have been associated with playing through pain (Simon & Docherty, 2014; Turner et al., 2002; Wiese-Bjornstal, 2010). Most of the athletes in this study were not overly concerned by the potential consequences brought on by playing through pain but some athletes did report taking them into consideration when they were injured and had to decide whether they should keep pushing through their injury or not. Once again, age and experience seemed to

affect both the athletes' understanding and consideration of the consequences of playing through pain. The younger athletes who had not been seriously injured were the ones who diminished the significance of the potential consequences of playing through pain. The older athletes, who had a history of dealing with pain and injury, were the ones who expressed more concern about the long term consequences. The literature shows that athletes who have previously dealt with an injury seem to attribute more importance to the potential consequences of playing through pain (Théberge, 2008; Turner et al., 2002). However, studies also reveal that overall, athletes are more concerned about being able to train and compete than the possible consequences that may arise from doing so while injured (Curry 1993; Hammond et al., 2014a; Liston et al., 2006).

Head injuries were not considered in this study but other studies show that they are one type of injury that a majority of athletes are not willing to play through because of the associated consequences (Madrigal et al. 2015; Safai, 2003). In fact, RA01 reported choosing to change sports in part because of the pressure she had felt from a coach to continue to play basketball with a concussion.

Dreams & goals. While the *Impact & Consequences* of playing through pain appeared to discourage athletes from doing it, the desire to reach *Dreams & Goals* was a major factor that motivated athletes to play through their pain. The athletes in this study all mentioned that their dream was to make it to the Olympics. Subsequently, all of their goals were oriented towards achieving this dream, and at the time of their interview, the athletes had just gone through a major competition while injured. Other studies presented the considerable influence of dreams and goals on the decision-making process of an athlete playing through pain. For example, Curry (1993) found that athletes had feelings

of contempt for others who allowed pain and injury to stand in the way of accomplishing a goal. Wanting to win a specific game or wanting to qualify for an important event (e.g.: play-offs, Nationals...) were also identified as main reasons for playing through pain (Hammond et al., 2014a, Madrigal et al., 2015). A retired professional football player from Turner and colleagues' study (2002), who now suffers from osteoarthritis because he played injured in his career, mentioned that if he could go back in time he would not do things differently because playing through his pain allowed him to become a successful athlete. These findings support the idea that sub-elite athletes, who are at the point in their career where they really have to prove that they have what it takes to make it to the ultimate level and reach their goals, are particularly prone to playing through their pain.

Pain Behaviours

While pain behaviours were shown to be valuable in assessing the pain experience of individuals with communication impairments (Cook et al., 2013; Van der Putten & Vlaskamp, 2011; Vervoort et al., 2007), a limited amount of research has been conducted to investigate the expression of pain in populations without communication impairment. In the sports medicine literature, there were no studies identified that described the use of pain behaviours to assess an athlete's pain experience. To gather more insight on the possibility that pain expression by athletes is evident when playing through pain and also, how these pain behaviours were interpreted by coaches and rehabilitation specialists, this study included an observation session. This session was aimed at exploring if athletes do communicate pain through pain behaviours or if they try to hide or disguise their pain and to examine the interaction between the coach and the athlete's non-verbal display of pain.

The coaches and rehabilitation specialists in this study all affirmed that they thought it was possible for them to observe pain behaviours in their athletes. However, they mentioned being particularly keen at noticing changes in their athletes' movement execution, which in itself is not a pain behaviour (e.g., guarding or bracing) but rather a functional limitation that the athlete is adopting due to pain. By adapting their skills to their pain, the athlete's is not aiming to communicate that they are in pain but they are acknowledging it and learning how to work with it. In addition, the athletes reported manipulating their facial expression and body language so that their coaches and rehabilitation specialists would not be able to recognize that they are in pain, until they decided that they wanted them to know. It was through their mood changes and their skill execution that the people working with them were most able to determine that they are in pain. Therefore, it is athletes' functional limitations that may be due to pain that appear to be the main way that coaches and rehabilitation specialists discern pain in the athlete. Pain behaviours such as grimacing, flinching, bracing, do not seem to be very valuable for coaches and rehabilitation specialists to be able to determine that athletes are playing through their pain.

Relationships

As mentioned above, literature on playing through pain often refers to the athlete's sportsnet and it is suggested that those individuals can shape the athlete's thought processes and resulting actions when they play through pain (Nixon, 1994, Wiese-Bjornstal, 2010). Despite the suggested involvement of these individuals, few studies have looked at the phenomenon from their perspective or investigated the

dynamics of the relationships between the athlete and other members of their sportsnet and its impact on the athlete playing through pain.

One study found that a good relationship between athletes and their coaches/rehabilitation specialists would have a positive effect on the athletes' recovery from an injury (Robbins & Rosenfeld, 2001). In this study, both coaches and rehabilitation specialists appeared concerned by the possible consequences associated with playing through pain but also understood the importance of training for and competing in certain key events. Being supportive of their injured athletes appeared to make them more approachable to discuss playing through pain. In fact, the athletes all reported being able to go and talk to their coaches when they felt like they needed to have their training adapted or they needed a break. They also felt comfortable reaching out to their rehabilitation specialists when they needed guidance. Therefore, alike Robbins & Rosenfeld's findings, the findings from this study suggest that a good relationship between athletes and their coaches /rehabilitation specialists would have a positive impact on injury management.

Conclusion

The athlete who is playing through pain is constantly navigating a fine line of decision-making. Although external factors such as pressure and the culture of risk were shown to have an influence, the decision-making itself revealed to be mostly internal. The athlete's perception of what they were feeling and how those feelings are expressed appeared to highly influence decisions about playing injured. Athletes admitted to modulating their verbal and non-verbal expressions of pain. Masking their pain from the people observing them, such as their coaches and rehabilitation specialists, allowed them

to have more control on the decision to keep going or stop. This sheds doubt on the value of observing pain behaviours to get a truthful reading of how the athletes are feeling and to manage their injuries based on that. Instead, athletes, coaches and rehabilitation specialists reported on relying on functional limitations such as altered movement and decreased performance, and mood changes to assess their athletes' condition. And, to be successful in identifying these changes, they reported the need to know their athletes well. Another finding of interest was that athletes did not express much concern about the potential long term consequences of playing through pain. The importance they attributed to reaching their goals appeared to have a bigger impact on their decision-making.

Given that much of the decision-making happens internally, when inexperienced athletes have difficulty discerning soreness from pain and that these athletes are at the sub-elite level with aspirations of the Olympics, they are in some ways quite vulnerable to making poor decisions in regards to potential long term consequences. In this study coaches and rehabilitation specialists were identified as concerned about the potential long term consequences of playing through pain. Overall, the athletes reported having good relationships with their coaches and rehabilitation specialists and this seemed to contribute to a greater involvement of these people in their injury management. This finding therefore supports the importance of building good relationships especially between athletes, coaches and rehabilitation specialists when dealing with pain and injury.

Limitations and Recommendations

First, the sample size is small. Despite this, a satisfying level of depth was reached with the number of interviews that were conducted and additional recruitment was not deemed necessary. However, more data could be gathered by assessing the phenomenon from an entire triad's perspective and recruiting rehabilitation specialists that work with the participating coach and athlete.

Then, the sample does not include any male athletes. Yet, evidence suggests that when it comes to playing through pain, gender matters very little (Charlesworth and Young 2004; Malcom, 2006; Nixon 1994; Pike and Maguire 2003; Sabo 2004; Young and White 1995). Like male athletes, female athletes were shown to tolerate pain and continue to compete while injured to maintain their athletic identities, to avoid negative sanctions, and to win the respect of their teammates, coaches, and fans (Malcom, 2006). It would be interesting to conduct a parallel study that would look into the experiences of male athletes with playing through pain and validate what has been found in previous studies.

In addition, only individual sport athletes were considered. Conducting a study involving both individual and team sport athletes would have been too complex for a Master's thesis but further data could emerge from exploring the phenomenon from the team sport athlete's point of view and from comparing both athletes' point of views.

Finally, this study focused on sub-elite athletes but it would also be interesting to look into the topic from the elite athlete's perspective to explore the differences between both levels of performance.

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Appendix A: Athlete Participant Interview Guide

Thanks again for participating in my study. We will now proceed to the audio-recorded interview session. Please remember that at any time if you are uncomfortable answering a question you may ask me to skip it. Also, please take time to reflect on the questions to answer them as honestly and in as much detail as possible.

Before we begin do you have any questions about today's session?

I am now going to start recording our conversation.

General Questions

Tell me about yourself and your career as a gymnast/rower/speed skater.

Prompt questions:

- When did you start gymnastics/rowing/speed skating?
- Why did you chose this sport?
- What is your training schedule like?

Tell me about your goals as an athlete.

Tell me about your experience with injuries in sport.

Prompt questions:

- How do you perceive being injured?
- How do you manage your injuries?
- Which specialists do you seek treatment from?

How do you feel about playing through pain?

How do you decide to keep going or to stop?

Tell me about any pressure you may have felt to continue playing despite being in pain?

Prompt questions:

- Where does it come from?
- How do you manage it?

What is your understanding of the long term consequences of playing through pain?

Questions Specific to Photographs

Tell me about what you see in this photograph.

Prompt questions:

- Were you in pain at that moment?
- How do you know?
- Were you aware that you were conveying this observed behaviour?

Is there anything else that you would like to add regarding your experience with playing through pain?

That is everything I wanted to discuss today. Thanks again for taking the time to participate in this interview. I will transcribe the audio-recording of our session and send it to you as soon as possible. I will also confirm your agreement to use this information for future research or educational purposes.

Appendix B: Coach Participant Interview Guide

Thanks again for participating in my study. We will now proceed to the audio-recorded interview session. Please remember that at any time if you are uncomfortable answering a question you may ask me to skip it. Also, please take time to reflect on the questions to answer them as honestly and in as much detail as possible.

Before we begin do you have any questions about today's session?

I am now going to start recording our conversation.

General Questions

Tell me about yourself and your career as a gymnastics/rowing/speed skating coach.

Prompt questions:

- When did you start coaching?
- Why did you chose this sport?
- Why did you chose to coach sub-elite athletes?

Tell me about your coaching style.

Tell me about your role in managing the injuries suffered by your athletes.

Prompt questions:

- Do you refer your athletes to a specific specialist?

How do you know when one of your athletes is in pain?

How do you feel about athletes playing through pain?

How do you know when it is time to take an athlete out of a practice/competition?

What is your understanding of the long term consequences of playing through pain?

Questions Specific to Photographs

Tell me about what you see in this photograph.

Prompt questions:

- Do you think your athlete was in pain at that moment?
- How do you know?
- Do you recall noticing this behaviour?
- How do you react to such expressions of pain?

Is there anything else that you would like to add regarding your experience with playing through pain?

That is everything I wanted to discuss today. Thanks again for taking the time to participate in this interview. I will transcribe the audio-recording of our session and send it to you as soon as possible. I will also confirm your agreement to use this information for future research or educational purposes.

Appendix C: Rehabilitation Specialist Participant Interview Guide

Thanks again for participating in my study. We will now proceed to the audio-recorded interview session. Please remember that at any time if you are uncomfortable answering a question you may ask me to skip it. Also, please take time to reflect on the questions to answer them as honestly and in as much detail as possible.

Before we begin do you have any questions about today's session?

I am now going to start recording our conversation.

General Questions

Tell me about yourself and your career as a(n) athletic therapist/physiotherapist/chiropractor.

Prompt questions:

- When did you start practicing?
- Why did you chose this career?
- Why did you chose to work with athletes?

Tell me about your experience treating sub-elite athletes.

Tell me about your role in managing the injuries suffered by your athlete patients.

How do you know when one of your athletes is in pain?

Do you ever watch your athlete patients training or competing?

How do you feel about athletes playing through pain?

How do you know when it is time to take an athlete out of a practice/competition?

Prompt questions:

- Do you have a say with regards to this?

What is your understanding of the long term consequences of playing through pain?

Is there anything else that you would like to add regarding your experience with playing through pain?

That is everything I wanted to discuss today. Thanks again for taking the time to participate in this interview. I will transcribe the audio-recording of our session and send it to you as soon as possible. I will also confirm your agreement to use this information for future research or educational purposes.

Questions Specific to Photographs

Tell me about what you see in this photograph.

Prompt questions:

-Do you think the athlete was in pain at that moment?

-How do you know?

-Tell me more about how you identify pain in athletes?

Is there anything else that you would like to add regarding your experience with playing through pain?

That is everything I wanted to discuss today. Thanks again for taking the time to participate in this interview. I will transcribe the audio-recording of our session and send it to you as soon as possible. I will also confirm your agreement to use this information for future research or educational purposes.

Appendix D: COREQ Checklist

(Tong et al., 2007)

Domain 1: Research team and reflexivity

Personal Characteristics

1. Interviewer/facilitator Which author/s conducted the interview or focus group?
2. Credentials What were the researcher's credentials? *E.g. PhD, MD*
3. Occupation What was their occupation at the time of the study?
4. Gender Was the researcher male or female?
5. Experience and training What experience or training did the researcher have?

Relationship with participants

6. Relationship established Was a relationship established prior to study commencement?
7. Participant knowledge of the interviewer What did the participants know about the researcher? *e.g. personal goals, reasons for doing the research*
8. Interviewer characteristics What characteristics were reported about the interviewer/facilitator? *e.g. Bias, assumptions, reasons and interests in the research topic*

Domain 2: study design

Theoretical framework

9. Methodological orientation and Theory What methodological orientation was stated to underpin the study? *e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis*

Participant selection

10. Sampling How were participants selected? *e.g. purposive, convenience, consecutive, snowball*
11. Method of approach How were participants approached? *e.g. face-to-face, telephone, mail, email*
12. Sample size How many participants were in the study?
13. Non-participation How many people refused to participate or dropped out? Reasons?

Setting

14. Setting of data collection Where was the data collected? *e.g. home, clinic, workplace*
15. Presence of non-participants Was anyone else present besides the participants and researchers?
16. Description of sample What are the important characteristics of the sample? *e.g. demographic data, date*

Data collection

17. Interview guide Were questions, prompts, guides provided by the authors? Was it pilot tested?
18. Repeat interviews Were repeat interviews carried out? If yes, how many?
19. Audio/visual recording Did the research use audio or visual recording to collect the data?
20. Field notes Were field notes made during and/or after the interview or focus group?
21. Duration What was the duration of the interviews or focus group?
22. Data saturation Was data saturation discussed?
23. Transcripts returned Were transcripts returned to participants for comment and/or correction?

Domain 3: analysis and findings

Data analysis

24. Number of data coders How many data coders coded the data?
25. Description of the coding tree Did authors provide a description of the coding tree?
26. Derivation of themes Were themes identified in advance or derived from the data?
27. Software What software, if applicable, was used to manage the data?
28. Participant checking Did participants provide feedback on the findings?

Reporting

29. Quotations presented Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? *e.g. participant number*
 30. Data and findings consistent Was there consistency between the data presented and the findings?
 31. Clarity of major themes Were major themes clearly presented in the findings?
 32. Clarity of minor themes Is there a description of diverse cases or discussion of minor themes?
-

Appendix E: Coach Invitation Email

To: Provincial Sport Organization / Speed Skating/Gymnastics/Rowing Club

Could you please forward this to all NCCP level 3 gymnastics, rowing and speed skating coaches?

We invite you to take part in a research study being conducted by Amy Fortin-Barrette who is an athletic therapist and graduate student at Dalhousie University and by Katherine Harman who is a physiotherapist and Associate Professor at Dalhousie University.

Purpose

The purpose of this study is to explore the experiences of athletes, coaches and rehabilitation specialists with playing through pain to gain a better understanding of the factors associated with this topic. This will be done through observation and audio-recorded interviews.

Study Design

To explore the topic from different angles, we will study athletes and their coaches. The rehabilitation specialist will be studied separately. Eligible athletes must be: 12-25 years old, participating in gymnastics, speed skating or rowing at the provincial level and recovering from an injury. Eligible coaches must have their NCCP level 3 certification and at least 5 years of experience.

Athletes will be observed and photographed during one of their training sessions. These photographs will be used in interviews to focus the discussion. Each participant will be interviewed once.

Please contact us if you are interested and you are...

- a NCCP level 3 coach with at least 5 years of experience
- involved in gymnastics, rowing or speed skating
- working with provincial level athletes training to make the national team

Amy Fortin-Barrette at amyfbarrette@dal.ca or 418.445.1432, or
Dr. Katherine Harman at k.harman@dal.ca or 902.494.8820.

Thank you for your time and consideration. I am looking forward to your response.

Amy Fortin-Barrette
MScRRPT Candidate
CAT(C), FMSC

Appendix F: Athlete Invitation Document

Dear athlete,

We invite you to take part in a research study being conducted by Amy Fortin-Barrette who is an athletic therapist and graduate student at Dalhousie University and by Katherine Harman who is a physiotherapist and Associate Professor at Dalhousie University.

Purpose

The purpose of this study is to explore the experiences of athletes, coaches and rehabilitation specialists with playing through pain to get a better understanding of the factors associated with this topic. This will be done through observation and audio-recorded interviews.

Study Design

To explore the topic from different angles, we will study athletes and their coaches. The rehabilitation specialist will be studied separately. Eligible athletes must be: 12-25 years old, participating in gymnastics, speed skating or rowing at the provincial level and recovering from an injury. Eligible coaches must have their NCCP level 3 certification and at least 5 years of experience.

Athletes will be observed and photographed during one of their training sessions. These photographs will be used in interviews to focus the discussion. Each participant will be interviewed once.

Please contact me if you are interested and you are...

- an athlete aged 12-25 years old
- involved in gymnastics, rowing or speed skating
- training at the provincial level and aiming to make the national team
- currently working through an injury affecting your ligaments, tendons or muscles

Amy Fortin-Barrette at amyfbarrette@dal.ca or 418.445.1432, or
Dr. Katherine Harman at k.harman@dal.ca or 902.494.8820.

Thank you for your time and consideration. I am looking forward to your response.

Amy Fortin-Barrette
MScRRPT Candidate
CAT(C), FMSC

Appendix G: Rehabilitation Specialist Invitation Email

To: Clinic Receptionist

Could you please forward this to your athletic therapist(s)/sports physiotherapist(s)/sports chiropractor(s)?

We invite you to take part in a research study being conducted by Amy Fortin-Barrette who is an athletic therapist and graduate student at Dalhousie University and by Katherine Harman who is a physiotherapist and Associate Professor at Dalhousie University.

Purpose

The purpose of this study is to explore the experiences of athletes, coaches and rehabilitation specialists with playing through pain to gain a better understanding of the factors associated with this topic. This will be done through observation and audio-recorded interviews.

Study Design

Eligible rehabilitation specialists must be licensed practitioners and have at least 5 years of experience working with athletes in minimum 2 of the sports to be studied.

All rehabilitation specialists will be interviewed once to assess their perspectives and experiences with playing through pain.

Please contact me if you are interested and you are...

- an athletic therapist, a physiotherapist or a chiropractor with at least 5 years of experience
- working with provincial level gymnasts, rowers or speed skaters who are training to make the national team

Amy Fortin-Barrette at amyfbarrette@dal.ca or 418.445.1432, or
Dr. Katherine Harman at k.harman@dal.ca or 902.494.8820.

Thank you for your time and consideration. I am looking forward to your response.

Amy Fortin-Barrette
MScRRPT Candidate
CAT(C), FMSC

Appendix H: Athlete Participant Consent Form



Faculty of Health Professions: School of Physiotherapy

Athlete Consent Form

Title:

Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Principal Investigator:

Amy Fortin-Barrette
Athletic Therapist and MScRRPT Candidate
School of Physiotherapy
Dalhousie University
Email: amyfbarrette@dal.ca

Co-Investigator and Supervisor:

Katherine Harman
Associate Professor
Dalhousie University
Email: k.harman@dal.ca

Room 429 Forrest Building
Dalhousie University
5869 University Ave.
Halifax, NS B3H 4R2
Phone: 902.494.8820
FAX: 902.494.1941

Introduction

We invite you to take part in a research study being conducted by Amy Fortin-Barrette who is an athletic therapist and graduate student at Dalhousie University and by Katherine Harman who is a physiotherapist and Associate Professor at Dalhousie University. This study is part of her Master of Science Degree. Taking part in this study is up to you and you may withdraw from the study at any time for any reason. The information below presents the study, what it involves and discloses any benefit, risk, inconvenience or discomfort that you might experience. If you have any questions about this study please contact Amy Fortin-Barrette at amyfbarrette@dal.ca.

Purpose of the Study

The purpose of this study is to explore the experiences of athletes, coaches and rehabilitation specialists with playing through pain to get a better understanding of the factors associated with topic.

Who can take part in the research study?

You may participate in this study if you are a sub-elite athlete, aged 10-25 years old, competing in the sport of gymnastics, rowing or speed skating. A sub-elite athlete is referred to as an athlete who is part of the provincial team in their sport and training to make the national team. To take part in this study we also require that you are working through a musculoskeletal injury that affects your tendons, ligaments or muscles.

How many people are taking part in the study?

A total of 14 participants will take part in this study. As we want to explore playing through pain from several points of view, we are recruiting 6 coaches and 6 athletes that work together. In addition, we will be recruiting 2 rehabilitation specialists who will be interviewed for additional information on the topic.

What you will be asked to do:

We will observe you while you are practicing at your training center a few weeks before a competition or time-trial. This observation session will last 60-90 minutes. Both researchers will observe you while you train and take pictures of you in action. This part of the study does not require anything from you except for your consent to let us take pictures of you.

After your competition or time trial we will interview you. The interview will be held in room 425 of the Forrest Building which is located on Carleton Campus of Dalhousie University. If you prefer to be interviewed at another location, this could also be arranged. The interviews will be audio-recorded and will last 45-90 minutes. Both Amy Fortin-Barrette and Katherine Harman will be present for the interview. Amy will be leading the interview. She will be asking questions about your point of view on playing through pain. We hope that you will think about the questions and answer as honestly and fully as possible.

Once your audio-recorded interview is transcribed, you will be sent a copy of it by email. At this point, you will be encouraged to provide any clarifications or feedback on the transcript.

Overall, you should not have to commit more than 2 hours of your time to this study, excluding travel time to Dalhousie University.

Please note that your participation in this study does not commit you to accelerate your rehabilitation timeline or to return to competition before you are ready (and medically cleared) to do so.

Special considerations of this study

During this study, some of the information that you share or some of the photographs that we take may be pertinent in making a point or supporting a research concept. We may wish to use quotes from you or your photographs in our presentations or published research. If we use one of your quotations or photographs your name or any readily identifiable information will not be provided. At the end of the consent form, we ask you to provide explicit consent to use quotations from the interviews and photographs. It is important to note that information that you share with us will not be shared with any other athlete, coach or rehabilitation specialist participants.

Possible benefits, risks and discomforts

Benefits:

You may benefit from thinking and talking with the researcher about how you manage injuries. Otherwise, there are no anticipated direct benefits to you for participating in the study. We expect that the results of this study will increase our understanding of playing through pain. Therefore, we might learn things that will benefit others in the future.

Risks and Discomfort:

This study involves an observation and an interview session. It is possible that being observed may make you feel uncomfortable. Please note that we will not be judging your performance, only learning about your training practices and environment. If at any time you feel that our presence is disturbing your training session you may ask us to leave. It is also possible that some of our interview questions may make you feel uncomfortable. As you are not required to answer all questions that are asked, you may ask Amy to skip the question and she will simply move on to another question. You may also discontinue the interview at any time.

What you will receive for taking part in the study

To thank you for your time we will provide you with a CD of the pictures taken of you while you were training. We will also cover any parking fees associated with participating in this study.

How your information will be protected

The findings from this study will be used to increase awareness on the topic of playing through pain. Therefore, the findings may be published or used for educational purposes.

Privacy/Confidentiality:

All personal information including audio-recordings, photographs and transcripts will be stored on a password protected private computer. Any hard copy of private information (e.g., transcripts, consent forms) will be stored at Dalhousie University, inside a room that has a security-controlled entrance, and also behind a locked door. These data will be stored for seven years after publication. The information that you provide us during the interview will not be shared with any other athlete, coach or rehabilitation specialist participant. Only the two investigators and their assisting student Piaf DesRosiers will have access to your information. However, you're your consent, we will be using photographs of you during the interviews with your coach and the rehabilitation specialist

to enhance the discussion. When it comes to publishing the study and using information for educational purposes, your name or readily identifiable information will not be used. However, in the case where one of your photographs is used, this will render you completely identifiable. That is why your explicit consent for the use of your photographs is asked at the end of this consent form.

Anonymity:

Only you and your coach will be aware that you are participating in this study. We ask that you do not discuss your participation in this study with any rehabilitation specialist you might be seeking treatment from as this person is a potential participant. Any report or publication derived from this study will not use your name or readily identifiable information, for example the name of your training center. However, we do ask for your explicit consent to use the photographs we will have taken during the observation session. If you provide us with your consent you understand that a photograph identifying you could be retrieved in the final report or in another publication related to this study. In this case, you would no longer be an anonymous participant.

In addition, in rare circumstances, there is a duty to disclose information you have provided us with to the appropriate authorities. This would include situations such as abuse or neglect of a child, or an adult in need of protection

If you decide to stop participating

You are free to leave the study at any time. If you choose to discontinue your participation in the study you can also decide whether you want any of the information that you have contributed up to that point to be removed or if you will allow us to use that information. You have the opportunity to ask us to remove your data for up to 2 months after you have participated in the study. After that time, it will become impossible for us to remove it because it will likely have been included in the data analyses and possibly be already published.

Questions

We are happy to discuss any questions, comments or concerns you may have about the study. You can reach Amy Fortin-Barrette at any time at **418-445-1432** or by email: ***amyfbarrette@dal.ca***.

You will also be informed if any changes are made to the study or if there is any new information that comes up that could affect your decision to participate.

Problems or Concerns

If you have any ethical concerns about your participation in this research, you may also contact Catherine Connors from Research Ethics at Dalhousie University at (902) 494-1462, or email: ***ethics@dal.ca***.

Athlete Participant: CONSENT FORM - Signature Page

Title: Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Upon analysis of the data from your audio-recorded interview, information and/or substantial quotations may be drawn to later be used in reports, manuscripts or for educational purposes. As mentioned above, any report or publication derived from this study will not identify you. If you consent to participate in the study, once the study is complete, your consent will be confirmed and you can decide to no longer allow the researchers to use your information.

I have read the description of this study. I have been given the opportunity to discuss it and my questions have been answered adequately.

I hereby consent to take part in this study and allow the investigators to use my information derived from the study. However, I realize that my participation is voluntary and that I am free to withdraw from the study at any time within the next 2 months.

_____	_____	_____
Printed name of participant	Signature of participant	Date

Here we request your explicit consent for the use of quotations and photographs:

I hereby consent to allow the investigators to use substantial quotes from the audio-recording in publications, reports or for educational purposes:

- YES
- NO

I hereby consent to allow the investigators to use photographs of me training taken during the observation session in publications, reports or for educational purposes:

- YES
- NO

I hereby consent to allow the investigators to use photographs of me training during their interview with my coach and the participating rehabilitation specialists:

- YES
- NO

Prior to using substantial quotations or photographs from this study, I need to review the material:

- YES, you can contact me at _____.
- NO, I do not need to review substantial quotations or photographs.

**** Consent from a parent/legal guardian is required for athletes under age 19.**

Please refer to the next page for the parent/legal guardian consent form. **

Parent of Athlete Participant: CONSENT FORM - Signature Page

Title: Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

For every participant aged 18 years old or younger, we require additional consent from a parent or legal guardian. If you give consent for your child to participate in the study, once the study is complete, your consent will be confirmed and you can decide to no longer allow the researchers to use of your child's information.

I have read the description of this study. I have been given the opportunity to discuss it and my questions have been answered adequately.

Here we request your explicit consent for the use of quotations and photographs:

I hereby consent to allow the investigators to use substantial quotes from my child's audio-recording in publications, reports or for educational purposes:

- YES
- NO

I hereby consent to allow the investigators to use photographs of my child training taken during the observation session in publications, reports or for educational purposes:

- YES
- NO

I hereby consent to allow the investigators to use photographs of my child training during their interview with their coach and the participating rehabilitation specialists:

- YES
- NO

Prior to using substantial quotations or photographs from this study, I need to review the material:

- YES, you can contact me at _____.
- NO, I do not need to review substantial quotations or photographs.

I hereby consent for my child to take part in this study and allow the investigators to use their information derived from the study. However, I realize that my child's participation is voluntary and that they are free to withdraw from the study at any time within the next 2 months.

Printed name of parent/legal guardian

Signature of parent/legal guardian

Date

Athlete Participant: CONSENT FORM - Signature Page

Title: Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Upon analysis of the data from your audio-recorded interview, information and/or substantial quotations may be drawn to later be used in reports, manuscripts or for educational purposes. As mentioned above, any report or publication derived from this study will not identify you. If you consent to participate in the study, once the study is complete, your consent will be confirmed and you can decide to no longer allow the researchers to use of your information.

I have read the description of this study. I have been given the opportunity to discuss it and my questions have been answered adequately.

I hereby consent to take part in this study and allow the investigators to use my information derived from the study. However, I realize that my participation is voluntary and that I am free to withdraw from the study at any time.

Printed name of participant Signature of participant Date

Here we request your explicit consent for the use of quotations and photographs:

I hereby consent to allow the investigators to use substantial quotes from the audio-recording in publications, reports or for educational purposes:

- YES
- NO

I hereby consent to allow the investigators to use photographs of me training taken during the observation session in publications, reports or for educational purposes:

- YES
- NO

Prior to using substantial quotations or photographs from this study, I need to review the material:

- YES, you can contact me at _____.
- NO, I do not need to review substantial quotations.

Faculty of Health Professions: School of Physiotherapy

Young Athlete Assent Form (10-14 years old)

Title:

Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Researcher #1:

Amy Fortin-Barrette

Email: amyfbarrette@dal.ca

Researcher #2:

Katherine Harman

Email: k.harman@dal.ca

Description of the study

We want to tell you about a research study we are doing. A research study is a way to learn more about something. We would like to find out more about the experiences of athletes, coaches and rehabilitation specialists with playing through pain. The sports we are studying are gymnastics, rowing and speed skating. You are being asked to join the study because you are an athlete competing in the sport of gymnastics, rowing or speed skating and you are working through the pain of an injury that affects your tendons, ligaments or muscles.

If you agree to join this study, we will observe you while you are practicing at your training center a few weeks before a competition. This observation session will last 60-90 minutes. The researchers will observe you while you train and take pictures of you in action. You do not have to do anything for this part of the study apart from accepting that we take pictures of you.

After your competition, we will interview you. The interview will be a conversation between you and Amy. Amy's supervisor, Katherine, will also be present. Amy will be asking questions about your opinion on playing through pain. The interview will be recorded on a tape recorder and it will last about 1h. In total, the study should only take up to 2h of your time.

Like we explained, this study has two parts; the observation and the interview. It is possible that being observed may make you feel uncomfortable. If at any time you feel uncomfortable while we are observing you practice you may ask us to leave. It is also possible that some of the questions we ask in the interview may make you feel uncomfortable. If a question makes you feel uncomfortable, you may ask Amy to skip the

Appendix I: Coach Participant Consent Form



Faculty of Health Professions: School of Physiotherapy

Coach Consent Form

Title:

Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Principal Investigator:

Amy Fortin-Barrette
Athletic Therapist and MScRRPT Candidate
School of Physiotherapy
Dalhousie University
Email: amyfbarrette@dal.ca

Co-Investigator and Supervisor:

Katherine Harman
Associate Professor
Dalhousie University
Email: k.harman@dal.ca

Room 429 Forrest Building
Dalhousie University
5869 University Ave.
Halifax, NS B3H 4R2
Phone: 902.494.8820
FAX: 902.494.1941

Introduction

We invite you to take part in a research study being conducted by Amy Fortin-Barrette who is an athletic therapist and graduate student at Dalhousie University and by Katherine Harman who is a physiotherapist and Associate Professor at Dalhousie University. This study is a component of her Master of Science Degree. Taking part in this study is up to you and you may withdraw from the study at any time for any reason. The information below presents the study, what it involves and discloses any benefit, risk, inconvenience or discomfort that you might experience. If you have any questions about this study please contact Amy Fortin-Barrette at amyfbarrette@dal.ca.

Purpose of the Study

The purpose of this study is to explore the experiences of athletes, coaches and rehabilitation specialists to gain further insight on the factors associated with playing through pain.

Who can take part in the research study?

You may participate in this study if you are a coach in the sport of gymnastics, rowing or speed skating, coaching athletes at the sub-elite level. By sub-elite level we refer to the category of athletes who are part of the provincial team in their sport and training to make the national team. To take part in this study, we also ask that you have at least 5 years of experience coaching at this level.

How many people are taking part in the study?

A total of 14 participants will take part in this study. As we want to explore playing through pain from several points of view, we are recruiting 6 coaches and 6 athletes that work together. In addition, we will be recruiting 2 rehabilitation specialists who will be interviewed for additional information on the topic.

If you agree to participate in the study and we cannot recruit/interview one of your athletes to participate before February 2016, then your participation will no longer be needed.

What you will be asked to do:

To help us understand the experience of athletes, coaches and rehabilitation specialists with playing through pain, we will be interviewing individuals from all three groups and doing some observation.

An observation session will be conducted at your training center a few weeks before one of your athletes' competition or time-trial. This observation session will last 60-90 minutes and only the athlete participating in the study will be subject to our observation. Both researchers will observe this athlete while they train and take pictures of them in action. This part of the study does not require anything from you except for your consent to let us take pictures during one of your practices. The pictures will be taken in attempt to identify different behaviours your athlete displays while training. These pictures will be used for the study and they may be shared and published in presentations or reports with the explicit consent from the participating athlete.

After your athlete's competition or time trial we will conduct an interview with you. The interviews will be held in room 425 of the Forrest Building which is located on Carleton Campus of Dalhousie University. If you prefer to be interviewed at another location, this could also be arranged. The interviews will be audio-recorded and will last 45-90 minutes. Both Amy Fortin-Barrette and Katherine Harman will be present for the interview. Amy will be leading the interview. She will be asking questions about your perspective on the phenomenon of playing through pain. We hope that you will reflect on the questions and respond as honestly and fully as possible.

Once your audio-recorded interview is transcribed, you will be sent a copy of it by email. At this point, you will be encouraged to provide any clarifications or feedback on the transcript.

Overall, you should not have to commit more than 2 hours of your time to this study, excluding travel time to Dalhousie University.

Special considerations of studies including interviews

During the interview, some of the information that you share may be pertinent in making a point or supporting a research concept. Using your quotations in published research may be valuable. If we use one of your quotations your name or any readily identifiable information will not be provided. At the end of the consent form, we ask you to provide explicit consent to use quotations from the interviews and other information derived from the study. It is important to note that information that you share with us will not be shared with any other athlete, coach or rehabilitation specialist participants.

Possible benefits, risks and discomforts

Benefits:

You may benefit from discussing and reflecting on how you manage injuries with the researcher. We expect that the results of this study will increase our understanding of the phenomenon of playing through pain. Therefore, we might learn things that will benefit you as well as other coaches in the future.

Risks and Discomfort:

This study involves an observation and an interview session. While we will not be observing you directly our presence may make you feel uncomfortable. Please note that we are not there to judge any of your actions but only to gain information on your athlete's training practices and environment. If at any moment you feel like our presence is disturbing your training session you may ask us to leave. Likewise, it is possible that some of our interview questions may make you feel uncomfortable. As you are not required to answer all questions that are asked, you may ask Amy to skip the question and she will simply move on to another question. You may also discontinue the interview at any time.

What you will receive for taking part in the study

Unfortunately, this study is not funded therefore we cannot compensate you for your time. However, we will cover any parking fees associated with taking part in this study.

How your information will be protected

The findings from this study will be used to increase awareness on the topic of playing through pain. Therefore, the findings may be published or used for educational purposes.

Privacy/Confidentiality:

All personal information including audio-recordings and transcripts will be stored on a password protected private computer. Any hard copy of private information (e.g.,

transcripts, consent forms) will be stored at Dalhousie University, inside a room that has security-controlled entrance, and also behind a locked door. These data will be stored for seven years after publication. The information that you provide us will not be shared with any other athlete, coach or rehabilitation specialist participants. Only the two investigators and their assisting student Piaf DesRosiers will have access to your information. When it comes to publishing the study and using information for educational purposes, your name or readily identifiable information will not be used.

Anonymity:

Only you and your athlete will be aware that you are participating in this study. Any report or publication derived from this study will not use your name or readily identifiable information, for example the name of your training center. In rare circumstances, there is a duty to disclose information you have provided us with to the appropriate authorities. This would include situations such as abuse or neglect of a child, or an adult in need of protection.

If you decide to stop participating

You are free to leave the study at any time. If you choose to discontinue your participation in the study you can also decide whether you want any of the information that you have contributed up to that point to be removed or if you will allow us to use that information. You have the opportunity to ask us to remove your data for up to 2 months after you have participated in the study. After that time, it will become impossible for us to remove it because it will likely have been included in the data analyses and possibly be already published.

Questions

We are happy to discuss any questions, comments or concerns you may have about the study. You can reach Amy Fortin-Barrette at any time at **418-445-1432** or by email: ***amyfbarrette@dal.ca***.

You will also be informed if any changes are made to the study or if there is any new information that comes up that could affect your decision to participate.

Problems or Concerns

If you have any ethical concerns about your participation in this research, you may also contact Catherine Connors from Research Ethics at Dalhousie University at (902) 494-1462, or email: ***ethics@dal.ca***.

Coach Participant: CONSENT FORM - Signature Page

Title: Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Upon analysis of the data from your audio-recorded interview, information and/or substantial quotations may be drawn to later be used in reports, manuscripts or for educational purposes. As mentioned above, any report or publication derived from this study will not identify you. If you consent to participate in the study, once the study is complete, your consent will be confirmed and you can decide to no longer allow the researchers to use your information.

I have read the description of this study. I have been given the opportunity to discuss it and my questions have been answered adequately.

I hereby consent to take part in this study and allow the investigators to use my information derived from the study. However, I realize that my participation is voluntary and that I am free to withdraw from the study at any time within the next 2 months.

Printed name of participant Signature of participant Date

Here we request your explicit consent for the use of quotations:

I hereby consent to allow the investigators to use substantial quotes from the audio-recording in publications, reports or for educational purposes:

- YES
- NO

Prior to using substantial quotations from this study, I need to review the material:

- YES, you can contact me at _____.
- NO, I do not need to review substantial quotations.

Appendix J: Rehabilitation Specialist Participant Consent Form



Faculty of Health Professions: School of Physiotherapy

Rehabilitation Specialist Consent Form

Title:

Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Principal Investigator:

Amy Fortin-Barrette
Athletic Therapist and MScRRPT Candidate
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Co-Investigator and Supervisor:

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Introduction

We invite you to take part in a research study being conducted by Amy Fortin-Barrette who is an athletic therapist and graduate student at Dalhousie University and by Katherine Harman who is a physiotherapist and Associate Professor at Dalhousie University. This study is a component of her Master of Science Degree. Taking part in this study is up to you and you may withdraw from the study at any time for any reason. The information below presents the study, what it involves and discloses any benefit, risk, inconvenience or discomfort that you might experience. If you have any questions about this study please contact Amy Fortin-Barrette at amyfbarrette@dal.ca.

Purpose of the Study

The purpose of this study is to explore the experiences of athletes, coaches and rehabilitation specialists to gain further insight on the factors associated with playing through pain.

Who can take part in the research study?

Athletic therapists, sports physiotherapists and sports chiropractors who are certified practitioners in their field and have at least 5 years of experience working with athletes can take part in this study. We also ask that they have worked with at least two of the sports that are being studied (gymnastics, rowing and speed skating).

How many people are taking part in the study?

A total of 14 participants will take part in this study. As we want to explore playing through pain from several points of view, we are recruiting 6 coaches and 6 athletes that work together. In addition, we will be recruiting 2 rehabilitation specialists who will be interviewed for additional information on the topic.

What you will be asked to do:

To help us understand the experience of athletes, coaches and rehabilitation specialists with playing through pain, we will be interviewing individuals from all three groups.

The interviews will be held in room 425 of the Forrest Building which is located on Carleton Campus of Dalhousie University. If you prefer to be interviewed at another location, this could also be arranged. The interviews will be audio-recorded and will last 45-90 minutes. Both Amy Fortin-Barrette and Katherine Harman will be present for the interview. Amy will be leading the interview. She will be asking questions about your perspective on the phenomenon of playing through pain. We hope that you will reflect on the questions and respond as honestly and fully as possible.

Once your audio-recorded interview is transcribed, you will be sent a copy of it by email. At this point, you will be encouraged to provide any clarifications or feedback on the transcript.

Overall, you should not have to commit more than 1.5 hours of your time to this study, excluding travel time to Dalhousie University.

Special considerations of studies including interviews

During the interview, some of the information that you share may be pertinent in making a point or supporting a research concept. Using your quotations in published research may be valuable. If we use one of your quotations your name or any readily identifiable information will not be provided. At the end of the consent form, we ask you to provide explicit consent to use quotations from the interviews and other information derived from the study. It is important to note that information that you share with us will not be shared with any other athlete, coach or rehabilitation specialist participants.

Possible benefits, risks and discomforts

Benefits:

You may benefit from discussing and reflecting on how you manage injuries with the researcher. In addition, we expect that the results of this study will increase our understanding of the phenomenon of playing through pain. Therefore, we might learn things that will benefit your practice in the future.

Risks and Discomfort:

This study involves face to face interviews. It is possible that some of our interview questions may make you feel uncomfortable. As you are not required to answer all questions that are asked, you may ask Amy to skip the question and she will simply move on to another question. You may also discontinue the interview at any time.

What you will receive for taking part in the study

Unfortunately, this study is not funded therefore we cannot compensate you for your time. However, we will cover any parking fees associated with taking part in this study.

How your information will be protected

The findings from this study will be used to increase awareness on the topic of playing through pain. Therefore, the findings may be published or used for educational purposes.

Privacy/Confidentiality:

All personal information including audio-recordings and transcripts will be stored on a password protected private computer. Any hard copy of private information (e.g., transcripts, consent forms) will be stored at Dalhousie University, inside a room that has security-controlled entrance, and also behind a locked door. These data will be stored for seven years after publication. The information that you provide us will not be shared with any other athlete, coach or rehabilitation specialist participants. Only the two investigators and their assisting student Piaf DesRosiers will have access to your information. When it comes to publishing the study and using information for educational purposes, your name or readily identifiable information will not be used.

Anonymity

Only you will be aware that you are participating in this study. We ask that you do not discuss your participation in this study with any athletes who may be seeking treatment from you as they might be potential participants. Any report or publication derived from this study will not use your name or readily identifiable information, for example the name of your clinic. In rare circumstances, there is a duty to disclose information you have provided us with to the appropriate authorities. This would include situations such as abuse or neglect of a child, or an adult in need of protection.

If you decide to stop participating

You are free to leave the study at any time. If you choose to discontinue your participation in the study you can also decide whether you want any of the information

that you have contributed up to that point to be removed or if you will allow us to use that information. You have the opportunity to ask us to remove your data for up to 2 months after you have participated in the study. After that time, it will become impossible for us to remove it because it will likely have been included in the data analyses and possibly be already published.

Questions

We are happy to discuss any questions, comments or concerns you may have about the study. You can reach Amy Fortin-Barrette at any time at **418-445-1432** or by email: ***amyfbarrette@dal.ca***.

You will also be informed if any changes are made to the study or if there is any new information that comes up that could affect your decision to participate.

Problems or Concerns

If you have any ethical concerns about your participation in this research, you may also contact Catherine Connors from Research Ethics at Dalhousie University at (902) 494-1462, or email: ***ethics@dal.ca***.

Rehabilitation Specialist Participant: CONSENT FORM - Signature Page

Title: Exploring the experiences of sub-elite athletes with playing through pain: A focused ethnography of gymnasts, rowers and speed skaters

Upon analysis of the data from your audio-recorded interview, information and/or substantial quotations may be drawn to later be used in reports, manuscripts or for educational purposes. As mentioned above, any report or publication derived from this study will not identify you. If you consent to participate in the study, once the study is complete, your consent will be confirmed and you can decide to no longer allow the researchers to use your information. In addition, if you consent to participate in the study AND consent to allow the researchers to use substantial quotations, you may also revoke this consent after the study is complete.

I have read the description of this study. I have been given the opportunity to discuss it and my questions have been answered adequately.

I hereby consent to take part in this study and allow the investigators to use my information derived from the study. However, I realize that my participation is voluntary and that I am free to withdraw from the study at any time within the next 2 months

Printed name of participant Signature of participant Date

Here we request your explicit consent for the use of quotations:

I hereby consent to allow the investigators to use substantial quotes from the audio-recording in publications, reports or for educational purposes:

- YES
- NO

Prior to using substantial quotations from this study, I need to review the material:

- YES, you can contact me at _____.
- NO, I do not need to review substantial quotations.

Appendix K: Photographs

SSA01



GA01



GA02



RA01



Appendix L: Personal Interest

When I first decided to explore the topic of playing through pain I already had an opinion about it. As a retired competitive gymnast, a coach and a rehabilitation specialist I have been exposed to playing through pain multiple times from several perspectives. I believe that my background highly influences my outlook on my research. I therefore think that it is important for me to address my personal interest in studying this topic.

Amy, the Athlete

I started gymnastics when I was three years old. I do not recall it ever not being a part of my life. Despite the fact that I lived in a small town with a gymnastics program that did not really develop high level athletes, I chose to give it all I had and I strived to make it as far as I could. Gymnastics is a physically demanding sport and injuries are practically inevitable. Throughout my career I suffered my share of injuries but I considered myself pretty good at working through them. That was... until I pushed my limit a little too far. I ignored the signs my body was sending me to make it through one more competition. That competition ended up being my last. I was 16 years old when I tore my ACL and was never able to practice gymnastics at the level I was at again. Since, I have had three surgeries for gymnastics related injuries and I cannot say that to this day I have fully recovered from these injuries. The doctors have already told me that my chances of developing arthritis at a young age are very high. I am not looking forward to it. Do I regret playing through my pain to the point where I have inflicted this much damage on my body? Not at all. However, looking back I think that my injuries could have been managed better and that some of the consequences could have been prevented

or at the least diminished. Consequently, I elaborated this project with the intention to work towards identifying effective harm-reduction strategies for injured athletes.

Amy, the Coach

I started coaching when I was 14 years old. To me, coaching is one of the most rewarding jobs. I really enjoy being able to share my knowledge with athletes who are as passionate about the sport as I am. However, being a coach involves making challenging decisions. One of the toughest ones is deciding when to stop an athlete from practicing or competing due to an injury. Knowing when your athlete has reached their limit and deciding if you are putting them at risk for further damage is difficult. Most of the time, coaches refer the athlete to a healthcare professional who will make the call. However, sometimes, the decision has to be made on the spot and there is no one to tell you what is best. In those cases, we wonder... “How do you know if this athlete should be stopped?” Some athletes will tell you. Some athletes will communicate it through their body language. Some athletes will try to hide it. It is never an easy call.

The coach is often overlooked in this decision making process of when to slow down or completely stop an athlete. Yet, they are often involved. Consequently, I chose to explore playing through pain from the coach’s point of view as well. This allowed me to depict a more complete picture of topic being studied.

Amy, the Athletic Therapist

I graduated from Athletic Therapy at Concordia University in 2014 and then came to Halifax to study at the School of Physiotherapy (M.Sc. Rehabilitation Research) in September 2015. One year after beginning my Master’s degree I was offered a job with the Baie-Comeau Drakkar, a Quebec Major Junior Hockey League (QMJHL) team.

Therefore, after spending a whole year reading about playing through pain and elaborating a research project on the concept, I was directly emerged in it.

I work with 24 young motivated athletes who are willing to do anything to achieve their goal of making it to the NHL. When I say willing to do anything, it involves playing through their pain. It is a big part of the game; to be able to show that you can take some pain and still play to the best of your abilities, for your team's sake. Stoicism is definitely something a coach looks for in an athlete.

Having the final say on whether an athlete returns to the game or not is therefore very challenging. As an athletic therapist, I was trained to measure range of motion and strength and to do all these tests to identify a person's limitations. Objectively, I know when an athlete's body is functional enough to go through a little bit more stress. However, in a game setting, I cannot predict the checks, the slashes or the blocked shots. Even if there are only 30 seconds left to the game, I cannot predict how much additional stress an athlete's injured tissue will be subjected to if I allow them to return to play. In addition, when allowing an athlete to return to play, I cannot tell them to play less than 100% or to avoid this or that movement, especially when they are aiming to impress an NHL scout in the stands. When I send an athlete back to the game, I have to be aware that I am sending the athlete **BACK TO THE GAME**. With that in mind, the best decision always seems to be to take the athlete out and to send them back once the benefits outweigh the potential consequences. However, if I did that every time a player got injured, I would most likely have lost my job by now. The coaches always want the player to be back in the game and they want him back 5 minutes ago. Although I understand my athletes' willingness to push their limits as much as possible to reach their

goal, I also understand the potential consequences of pushing these limits and this is what makes the decision making process of whether an athlete should stay in the game or not very challenging. Consequently, I also chose to include different rehabilitation specialists in this study to get their take on injury management and return to play decision making. This allowed me to explore different opinions on how an athlete's rehabilitation can be best modulated to allow them to stay in the game and to address the potential long term consequences of playing through pain.

Relationships with Participants

In addition to having a background as an athlete, a coach and a rehabilitation specialist I had also been involved with some of the participants prior to the study. The two gymnasts and the two gymnastics coaches who volunteered to participate were from a gym where I, myself, have worked as a coach. I had interacted with them in the past. The co-investigator, Katherine Harman, also knew the two rowing coaches who took part in the study. Despite these relationships to the participants, they were recruited according to the protocol established and they were in no way coerced to take part in the study by the investigators.

To conclude, I believe that it is important to explain my personal interest and experience on the field. I do not think that my prior knowledge of the topic or my relationships with the participants have had a negative impact on my role as an investigator. Conversely, I think that having been around some of the participants and being familiar with their job and the environment they work in has given me credibility. I also think that it may have led them to open up more to me in the interview because they felt that I could relate to them. Also, with the approach we have taken, focused

ethnography, it is acknowledged that we do not need to put our past experience aside, but to incorporate it into the study.