Return to elite alpine sports activity after an anterior cruciate ligament injury

*Ski high school students` experiences*
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Table 1. Overview of the content analysis
Appendix - Interview questions
Abstract

**Purpose:** To explore the experiences of five elite alpine skiers, at a ski high school, returning to elite alpine sports activity after an anterior cruciate ligament (ACL) injury.

**Methods:** The qualitative study comprised two men and three women, who had sustained an ACL injury 2005-2006. Semi-structured interviews were conducted and an analysis of the manifest content was carried out.

**Results:** This led to the identification of seven categories which described the participant’s experiences of perceived opportunities for and barriers to a return to elite alpine skiing, experiences of support, a lack of support, self awareness/personal maturity, alpine skiing at various levels and physical capacity. The participants described their perceived opportunities with regard to a return to alpine skiing after an ACL injury as something positive to do with self belief, being mentally and physically prepared, regaining confidence in their own ability, being given time, and using active strategies. On the other hand, perceived barriers to a return to elite alpine skiing gave rise to negative feelings, for example fear, disheartenment, a total lack of or ambivalent confidence in their own ability and the use of passive strategies. Some participants experienced support while others experienced a lack of support from doctors, physiotherapists, coaches and friends. All of the interviewees emphasized that both mentally and practical support from the family was the most important factor. They all felt that ideally support should be lent at all levels and that access to a physiotherapist and to be given time were also crucial.

**Conclusion:** The findings in this study indicate that there are several factors involved in a return to elite alpine skiing. The men returned to alpine skiing at pre-injury level and they reported confidence in their own ability, active strategies, support on all levels and enhanced physical ability. All participants emphasized family support as the most important factor and considered that ideally support should be provided at all levels. To be given time and access to a physiotherapist were crucial.

**Keywords:** ACL injury, elite alpine skiers, perceptions, qualitative method.
1. Introduction

Sustaining an anterior cruciate ligament (ACL) injury is the most common injury in alpine skiing (Chadwick et al, 2007). Pujol et al (2007) report in a 25 year follow-up study that elite level alpine skiing has a very high incidence of primary ACL injury, bilateral ACL injuries, and re-injuries that do not seem to have declined during the last 25 years. Also Flörenes et al (2009) have described that the risk of injury among World Cup athletes in alpine skiing is even greater than previously reported. The knee is the most commonly affected part of the body and the knee injury rate has increased much faster and is higher in men than women. Most of those injured have difficulty returning to their pre-injury level in their sporting activity for various reasons. One reason which has been noted is a specific fear of sports or physical activity, leading to the injured avoiding physical and social activities. A second reason has to do with personality (Mikkelsen et al, 2000; Kvist et al, 2005). Other studies refer to the psychological mechanisms that may be of importance as regards the avoidance of physical activity or sports after ACL reconstructions (Thomeé et al, 2006). They also indicate that self-reported symptoms/functions and Internal Locus of Control are the most important determinants of self-efficacy in patients with an ACL injury. In order to strengthen self-efficacy, these determinants should be considered by the clinicians involved in the rehabilitation (Thomeé et al, 2007). They also reported that the patient’s perceived pre-operative self-efficacy of their knee function is of predictive value for their return to acceptable levels of physical activity, symptoms and muscle function one year after an ACL reconstruction (Thomeé et al, 2008). Therefore it would be more meaningful if we improved our knowledge and understanding of the thoughts and actions of a specific group of patients in a specific context by measuring coping strategies (Lazarus, 1993). It has been suggested that qualitative techniques are necessary to understand the subjective experiences of the patient’s and to probe for the connections between experiences and responses to satisfaction (Keith, 1998). Heijne et al (2008) establish that from a patient’s perspective it seems important that the choice between operative or non-operative treatment is discussed in terms of the meaning and extent of the post-operative rehabilitation, and the expected outcomes. There is also a need for more guidance and goal setting throughout the rehabilitation process. More attention should be paid to the identification of patient’s requiring extra support as early as possible. This is an important task for health professionals and especially physiotherapists. Hitherto, we have not found any published data that has studied experiences of a return to elite alpine sports after an ACL injury. The results of this study will hopefully be a useful aid for health professionals, physiotherapists and alpine trainers in how they support alpine high school students after an ACL injury.
The aim of this study was to explore the experiences of five elite alpine skiers at a ski high school returning to elite alpine sports after an ACL injury.

**Research questions**

What were their experiences after the ACL injury?

What was their experience of the support they were given after the ACL injury?

How have the experiences after the ACL injury affected the participants today?

**2. Material and methodology**

This qualitative study was conducted on five alpine skiers who sustained an ACL injury during the study period November 2005 to May 2006. They were selected from an elite alpine ski high school and consist of eleven male and eleven female which participated voluntarily in a study.

Of these five former students on the ski high school alpine programme mentioned above, two were men aged seventeen and eighteen respectively and there were three women, two aged nineteen and one sixteen. This was their first ACL injury. An ACL reconstruction was performed on all the skiers. In this interview study all five skiers were contacted and all five agreed to participate after receiving information about the aim of the study, their voluntary participation and confidentiality both in writing and orally. They were assured that they could withdraw from the study at any time without giving an explanation. Data were thus collected in December 2010 to January 2011, five years after the ACL injury.

**2.1 Interviews and qualitative content analysis**

The first author collected data by conducting interviews through Skype (video communication). An interview guide (see Appendix) was used covering questions about the participant’s experience of returning to elite alpine sports after an ACL injury. Each interview lasted between 30 and 45 minutes. All the participants were given the opportunity to talk for as long as they wished without time restriction. After each question in the interview guide, the interviewer asked: “Do you want to add anything more”? All the interviews were taped and transcribed.
verbatim. A test interview was carried out to obtain information about the interview process and to provide feedback for the interview quotations. The test interview was not included in the study.

A manifest qualitative content analysis was carried out to describe the explicit substance in the transcribed text (Downe-Wambolt B, 1992). The choice of method was based on the aim of the study and the analysis was performed in the following steps (Graneheim and Lundman, 2004).

- First the text was read, and at the same time the first author listened to the interviews several times to obtain a sense of the whole.

- After reading and listening to the interviews, meaning units that were consistent with the aim of the study were identified.

- The meaning units were condensed, to shorten the content while still preserving the core.

- The condensed units were coded and then grouped into sub-categories and categories so as to organize the text in a way that mirrored the central content in the interviews.

- The findings were presented in every research question in categories and quotations clarified and confirmed the findings.

The analyses were conducted by the first author and revised together with the second author. They were then adapted until a consensus had been reached between the two authors. Certain categories were found to be mutually exclusive and exhaustive.

2.2 Ethical approval

The study has been approved by the Regional Ethical Review Board in Stockholm, Sweden as a part of the alpine prevention project at Karolinska Institute. All participants gave their signed informed consent before the start of the study.
3. Findings

The analysis revealed seven categories, which described the experience of a return to elite alpine sports after an ACL injury as perceived by the participants. The categories were “Perceived opportunities for a return to elite alpine skiing”, “Perceived barriers to a return to elite alpine skiing”, “Experiences of support”, “Experiences of a lack of support”, “Self awareness/Personal maturity“, “Alpine skiing at various levels”, “Physical capacity”. The results are illustrated below in every research question and with quotes.

3.1. What were their experiences after the ACL injury?

The experiences after the ACL injury could be described in two categories; 1) Perceived opportunities for a return to elite alpine skiing 2) Perceived barriers to a return to elite alpine skiing.

3.1.1. Perceived opportunities for a return to elite alpine skiing

Three participants, two men and one woman described their feelings of hope and motivation from the injury to surgery.

“I really put a lot into my skiing and then when I had my cruciate ligament injury it felt like I really wanted to continue because my career had always gone in a positive direction”

From surgery to six months after surgery the two male participants experienced motivation and one female participant thought about how to return in the best possible way.

“After surgery it's bloody hard, when you wake up from the anaesthetic you wonder why am I doing this, but then things get better and better with each passing day”

After six to twelve months after surgery three participants’ two men and one woman felt pleasure in and a lust for skiing.

“Well I was happy to stand on skis again, and in the beginning it was fun to go out in the snow for the first time after my injury”

Two participants one man and one woman described that it takes time to regain your confidence in your ability and self-esteem. However, one male participant felt that it did not take long to develop confidence in his own ability.

“I didn't trust my knee at all to start with and my skiing wasn't good for the first few weeks I went skiing. But then I found that feeling again and it got better for every run I took. But it's obvious it's pretty difficult to regain your confidence. It takes time. That's something that you can
Three participants’ two men and one woman claimed that regaining your confidence in your own ability after an ACL injury was dependent on your belief in yourself both mentally and physically as well as positive information in early stage. The two male participants reported that they were both mentally and physically prepared and that they had positive feelings on their return to competitive alpine skiing the first time after the ACL injury.

“For me, belief is in the mind. You have to have faith in yourself, I believe that's very important”

“Things had gone so well during training already, so it felt good. I was skiing like I had done before the cruciate ligament injury, slightly better even so that felt good”

One female participant mentioned her perspective on doing other things in life after surgery to six months after surgery.

“In retrospect, I believe a lot changed with the surgery. The way I was in so much pain and had so many problems and somewhere along the line I started getting things in perspective and feeling that perhaps I should be doing something else with my life”

Three participants two men and one woman reported that active strategies were important, for example being focused, gaining acceptance, listening to your body and rehab training for a return to alpine skiing after an injury.

“There really is a lot of rehabilitation. That's really important, it's what's most important. You have to have strong knees as alpine skier”

To summarise, the participants’ perceived opportunities for a return to alpine skiing after an ACL injury involved different feelings like hope, motivation, joy and lust. In order to regain confidence in their own ability and their self-esteem, it is important to believe in yourself and be prepared both mentally and physically. The participants also established that positive information and time were relevant. Some participants listed being focused, gaining acceptance, listening to your body and rehab training as active strategies.

3.1.2. Perceived barriers to a return to elite alpine skiing

One male and two female participants experienced a great deal of pain, one man felt instability in his knee and one female became aware of the fact that something really had broken in her knee immediately after her injury.

“It really wasn't much fun. It really hurts the first time”
“*I knew pretty quickly that something had actually broken for real*”

Two female participants experienced feelings of disappointment that disaster had struck, after the injury but before the ACL reconstruction.

“*It was a real setback, it felt like the end of the world*”

Another female participant described the situation after surgery to six months after surgery as yo-yoing between hope and despair.

“*Ordered new skis, I had no thoughts of quitting. Once I began school and I realized that I wouldn’t be able to keep up with the others at the pace I would like to*”

Between six and twelve months after surgery, three female participants felt pangs of uncertainty, grief and disheartenment.

“*Of course it was very emotional. I followed my mate’s successes. Of course it was sad not to be able to join in and ski*”

One female participant had no confidence in her own ability.

“*They just threw me out onto the track and said: “Go, you have to start some time.” I was not able to get my head round it. I had no confidence*”

Another female participant experienced feelings of ambivalence with regards to her confidence in her own ability.

“*I’ve always believed that I, I know I’m strong. But because I trusted the doctor who discouraged me, I just didn’t dare. Even though I knew in my heart that I could do it. But naturally you worry that it might happen again*”

All the participants had mixed feelings when they returned to alpine skiing for the first time after their ACL injury. They felt, for example, fear, joy, happiness, expectant, hope and nervosity.

Two female participants described using passive strategies like waiting for improvements and doing what they had always done.

“*I didn't really have any good strategies for handling it so I just went for it. I really didn't have a very good strategy*”

To summarise, barriers to a return to alpine skiing included the participants’ experience of pain, instability, feelings of disappointment, that disaster had struck, uncertainty, grief, disheartenment, fear, nervosity and yo-yoing between hope and despair. They also described a lack of or ambivalent confidence in their own ability. Some participants used passive strategies like waiting
for improvements and doing what they had always done.

3.2. What was their experience of the support they received after their ACL injury?

The results can be divided into two categories; 1) experience of support and 2) experience of a lack of support.

3.2.1. Experience of support

Two male and one female participant received good support and had good access to their physiotherapist

“He explained things to me and helped out as well, he wanted me to understand what it was all about. He believed very strongly in me and I trusted him. So we worked well together”

Three participants, two male and one female felt that they had good access to their doctor and that he provided them with support and positive information

“It was up to me whether I wanted to have an operation or not. But he thought it would be best since he knew I would get better afterwards. I really felt that I got great support from my doctor”

The two male participants felt that they received individual support from their coaches.

“The support you get from your coaches is very important. The support I got at the ski high school was great. Because the coaches have been around for a long time and they know how to handle it. They took the time individually and they helped me a lot”

All five participants said that the support they got from their families helped them a great deal both mentally and with practical matters and they all emphasized that it was very important.

“They have always focused on me and my return and helped me with everything I’ve needed help with”

Three participants two men and one woman reported that support from friends helped them both mentally and with practical matters.

“They gave me support in every way, from talking to me individually, to helping me with rehab and stuff”

To summarise, some of the participants spoke of great support from doctors, physiotherapists, coaches and friends that all provided them with positive information. They were available to help and they did so individually. However, they all emphasized that support from family was most
important both mentally and with regard to practical matters.

3.2.2. Experience of a lack of support

Two female participants described their feelings of being forgotten and not being understood by their physiotherapists.

“I haven't seen a physio at all. Only when I was in hospital. She gave me a piece of paper with exercises. That was all, nothing else”

One male participant expressed a total lack of confidence in his doctors and that he felt that they had different knowledge. One female participant mentioned that she received negative information from her doctors.

“They said, and I did after all meet different doctors, that they really didn't think it would be possible to make a come back. There really was no positive support at all”

The three female participants experienced a lack of understanding and support, and said that their coaches didn't see them.

“I felt that I didn't receive any support at all. I felt as if they didn't care. If you didn’t attend training sessions, you just didn't exist”

Two female participants said that their friends showed a total lack of understanding and felt that they were self-centred. However, one of them didn't actually seek support either.

“No, I just think everyone was turned in on themselves during that period at ski high school and people didn't care about each other”

All the participants clarified that ideally support should be provided at all levels by coaches, doctors, family and friends. Having access to a physiotherapist being seen and having someone to talk to. Time was also a relevant factor.

To summarise, some participants experienced a lack of support from physiotherapists, doctors, coaches and friends, and mentioned feelings like being forgotten, not understood, and not being seen. Negative information, a lack of understanding and confidence were also described. All the participants agreed that ideally support should be provided at all levels, and that access to a physiotherapist and time were important factors.
3.3. How have the experiences after the ACL injury affected the participants today?

The participant’s experiences of how the ACL injury affected them can be divided into three categories; 1) Self-awareness/personal maturity, 2) Alpine skiing at various levels and 3) Physical capacity.

3.3.1. Self-awareness/personal maturity

All the participants stated that their experiences after the ACL injury had affected them today in some way or other. The two male participants reported positive mental and physical changes. One of them said that were it to happen again, it would be an experience. Two female participants reported an increased self-awareness and changes in lifestyle. One female participant expressed no personal dilemma or negative impact on her life.

“It has affected me in a hundred different ways. Well just like what you do today and like why you do not ski and what you do when you don't, you need to study”

“So the thing is that if it were to happen again, then I'd go through rehab, I'd know that then as I've already been through it once before.”

“Yes, a lot actually. I wouldn't be where I am today if I hadn't injured myself. It has made me a lot stronger, I had to think a lot about who I am, about my strengths and weaknesses”

To summarise, all the participants claimed that they were somehow affected by their experiences of their ACL injury. They reported positive mental and physical changes, that they had gained experience, increased their self-awareness changed lifestyle and that it was not a personal dilemma.

3.3.2. Alpine skiing at various levels

All five participants emphasized that they felt a sense of love for and pleasure in alpine skiing. The three female participants claimed that their feelings for skiing were more pleasurable and serene and that they did not have any feelings of pressure with regard to skiing today. However, the participants were involved in alpine skiing at different levels. One man is still competing at elite level in alpine skiing, another man is still active but at a lower level. The three female participants are free riders and one of them is a coach. One participant mentioned that watching television was one way of keeping in touch with alpine skiing.
“You still love the sport. I love being outdoors skiing. I try to go skiing as often as I can”

“My commitment is very strong I think. This is my second year of college and I compete in alpine skiing, so you could say that I’m still at the top”

“Slalom skiing is great fun. I don't really know if I would like to train again as I did at my ski high school. I want to keep it at a smaller level, at a lower level”

To summarise, all five participants emphasized that they still had feelings of love and pleasure for skiing but that they were involved at different levels, everything from still competing at the elite alpine level, to being active alpine skier at a lower level, to being a coach, to free riding and to watching television.

3.3.3. Physical capacity

The two male participants reported that their physical ability has never been better than it is today. One female participant stated that she exercises to keep fit.

“It's almost better than ever. I gained four kilos this summer and then I exercised four to five times per week”

“If I didn't take exercise I think it would be much worse off”

The three female participants all reported a deterioration in their physical ability for instance that they were less fit, had suffered a loss of strength and felt moderate pain under strain. They claimed that they coped with their daily activities well. However they described difficulties with things like standing on their heels and knees, a deteriorated range of motion when bending the knee, and difficulties climbing stairs.

“I do have a reduction in knee capacity of five per cent, that I got from my doctor, so it's not good. I can lift weights, and do cardio exercises in moderation. There are only a few exercises that give me a sore knee. But in every day life I have no problems. If I didn't take exercise, I think I would be much worse off.”

“Well, my fitness level is a little worse than it was before to be honest. And apart from that I have also lost a lot of strength. But I don't take as much exercise as I used to either”

To summarise, some of the participants reported an improvement in their physical ability and others did exercise to stay healthy. However other participants described a deterioration in their
physical ability. They were, for example less fit and had suffered a loss of strength. The same people also reported moderate pain and difficulties in their daily activities.

4. Discussion

4.1. On the results

In the present study some participants expressed having positive feelings like hope, motivation, joy and a lust for skiing and that seemed to help them return to elite alpine skiing. However, negative feelings like disappointment, fear, a sense of disaster having struck, grief, disheartenment, uncertainty and yo-yoing between hope and despair which some of the participants also reported appear to be barriers to a return to top-level alpine skiing. Negative feelings like fear are also supported by earlier research (Kvist et al, 2005) as being a hindrance to a return to a sporting activity after an ACL injury. In this study a further barrier to a return to alpine at pre-injury level mentioned by some of the interviewees was an ambivalent or a lack of confidence in one's own ability. Self-efficacy is described as a person's belief in his or her ability to implement a commitment has been put forward as being relevant for the final result of rehabilitation (Bandura and Locke, 2003; Thomeé et al, 2006). The present study seems to confirm that the participants who reported a confidence in their own ability and self-esteem were also those who returned to elite alpine skiing. This is in line with the results of the Thomeé et al (2007) study which found that patients who have a strong self-efficacy of knee function consider themselves to have fewer knee symptoms, better knee function and that the outcome after an injury or surgery is directly related to their individual behavior.

The participants in our study also established that to be given time after the ACL injury was important for their return to the elite alpine sporting activity. In a recent study of the Ardern et al, (2011a) had only 33 percent of the participants attempted competitive sport twelve months after an ACL reconstruction. The authors considered that people may require a longer postoperative rehabilitation period than common recommended to facilitate a return to competitive sport after ACL reconstruction. They also established there were no relationship between postoperative knee function and return to sport outcomes at twelve months after surgery. This was also in line with the results in a review study by the same authors were they suggest that psychological factors
may be contributing to return to competitive sport. (Ardern et al, 2011b).

The study at hand also indicates that there is a correlation between the fact that the participants who reported using active strategies, like being focused, gaining acceptance, listening to their body and doing a lot of rehab training after the ACL injury to help them return to elite alpine skiing, were the same people who reported having motivation and a confidence in their own ability. However those who spoke of using passive strategies for example waiting for improvements and doing what they had always done were the ones who claimed to be ambivalent about or have a complete lack of confidence in their own ability. It would be very interesting to identify the alpine skiers at ski high schools who sustain an ACL injury and who have little confidence in their own ability and who use passive strategies, with the aim of lending them support and to enhance their confidence in their own ability and self-efficacy to facilitate their return to alpine skiing at the pre-injury level.

Thomeé et al (2005) have found that the instrument (K-SES) used to measure perceived self-efficacy in those who have sustained an ACL injury has proved to be reliable and valid. They have also found that the instrument might provide valuable help when trying to identify those patients. This is also in line with Webster et al (2007) where the conclusion was that the decision to return to sports after an ACL reconstruction is associated with a significant psychological response and that the ACL-RSI scale may help to identify athletes who would find it difficult to return to a sporting activity. On the other hand, for future studies there is still a need to clarify how confidence in their own ability should be boosted in elite alpine skiers who have sustained an ACL injury.

Regarding support after the ACL injury some interviewees in this study experienced good support from physiotherapists, doctors, coaches and friends while others perceived a lack of support from the very same. In the study at hand the participants requested individual support from coaches and that is in accordance with Podlog and Eklund (2007) where coaches regard the provision of various forms of assistance as an important part of their coaching responsibilities and appreciate the benefits of such assistance in facilitating the return transition. Johnston and Caroll (1998) also found that social support from a number of sources, including coaches was beneficial in assisting athletes throughout the injury rehabilitation period.
All the participants in the study agreed that ideally support after an ACL injury should be provided at all levels from coaches, doctors, physiotherapists, family to friends all helping them return to elite alpine skiing. In line with Bandura (2004) who believes that one way to improve is to see others succeed (social modelling) and a second is encouragement (social persuasion), the participants in this study agree that it is most important to obtain that support after the ACL injury. However, all the participants experienced strong mental support from their families and also practical support and it was considered to be the most important form of support.

A major difference between the sexes was where the female participants spoke of a lack of support from physiotherapists, doctors, coaches and friends, for instance they mentioned a lack of understanding, support and the feeling of not being seen, while the male participants experienced good support from everyone mentioned above.

Despite the fact that some of the participants in this study did not feel that they received good support from health professionals, they seemed to be able to get on with their lives although they did not return to elite alpine skiing. In future studies, it would be very interesting to highlight and discuss whether an important part of rehabilitation after an ACL injury should be cognitive and how to identify those individuals who need to boost their confidence in their own ability to give them the opportunity to return to alpine skiing at pre-injury level. Wiese-Bjornstal et al (1998) have in their study integrated a model of the response to a sports injury and rehabilitation which is based on Lazarus and Folkman (1984) and their cognitive theory of stress and coping, where cognition is important.

All the participants in this study claim today that the experiences after their ACL injury somehow made them more mature. Despite the fact that some of them were involved in alpine skiing at a lower level than their pre-injury level in free riding, being a coach and watching television for example and never returned to elite alpine skiing after their ACL injury. Nonetheless they still felt a love and pleasure for skiing. They reported positive mental and physical changes, increased self-awareness, change in lifestyle, no negative life impact and gaining experience.

Johnson (1997) states that few or no athletes plan mentally for a possible injury and consequently have no strategies. Therefore the recommendation must be for alpine ski high schools to prepare their students for a possible ACL injury and to establish strategies for how they will support the
alpine students who sustain an ACL injury through their rehabilitation both mentally and physically to help them return to an elite alpine sport. In a review article Podlog et al (2011) reported self determination theory (SDT) as a framework for understanding athlete concerns in the return to sport from injury. Practical suggestions should be given to sport medicine practitioners, researchers and sport psychology specialists seeking to address athlete issues are provided using an SDT perspective. Their findings in a recent study on uninjured youth Swedish alpine skiers, demonstrate the importance of competence need satisfaction in the promotion of intrinsic motivation and support previous SDT research indicating the importance and benefits of intrinsic motivation in competitive sports. They suggest that an examination of the same cohort are important to gaining understanding for ways of fostering sustained athletic involvement (Podlog et al, 2011, submitted).

In this study, it was the male participants who managed to return to elite alpine skiing. In a recent cohort study Ageberg et al (2010) reported that female patients have statistically significant worse outcomes than male patients both before and one to two years after ACL reconstruction but there are no clinically relevant gender differences for improvement over time. This is in contrast to this study where the interviews were conducted five years after the ACL injury and there was still a gender difference regarding physical ability, activities in daily life and who returned to elite alpine skiing. However, the sample in this study is small. Therefore it would be of further interest in future studies to investigate whether there is a gender difference and whether women need different rehabilitation measures and tailor-made support to be able to return to elite alpine skiing.

There was also a further gender difference where the male participants reported that their perceived physical ability after the ACL injury improved while the females stated a deterioration in perceived physical capacity, for example a loss of strength. For health professionals, coaches, orthopaedic surgeons, and physiotherapists it has always been of greatest interest to find the predictors that enable ACL reconstructed athletes to return to pre-injury level in their sport. One of these predictors of interest is whether there are any differences in ACL reconstruction in male and female athletes using the patellar tendon and hamstring auto grafts. This has been studied by Gobbi et al, (2004) among others. They found that gender did not seem to be an important factor for the outcome when patellar bone grafts were used, while a hamstrings graft pointed at
increased laxity and some degree of persistence of weakness although clinical results showed no
gender difference. This together with the results from the present study confirms and reinforces
the belief that the predictor for the outcome of a return to elite alpine skiing is complex and
consists of both physical and physiological aspects. Therefore in the future we welcome both
qualitative and quantitative studies in the challenge to answer that question in order to improve
the possibilities of guiding the ACL reconstructed alpine ski students back to elite alpine sports. It
would also be interesting to study whether the experiences of the participants in this study are in
line with athletes in other sports.

4.2. On the methodology

In qualitative studies, the findings are evaluated in terms of trustworthiness such as credibility,
dependability and transferability (Graneheim and Lundman, 2004). The trustworthiness in the
present study was satisfactory as the data were only collected by the first author, who was not
involved in the interviewees’ rehabilitation but who gave identical instructions to every
participant, and conducted all the individual interviews using Skype. A strength of this study is
that all the potential participants who were initially contacted agreed to take part in the study, and
that the material was selected from their participation in a second study. This latter study
compared uninjured and ACL injured alpine skiers (unpublished data), and the participants were
from the same ski high school and practiced the same sport. The two authors read the interviews
and discussed suggestions for defining categories until an agreement was reached between the
authors. Quotations clarified and confirmed the findings. Another strength of the present study is
that all participants are around the same age.

An important question in qualitative research is about the sample size. Kvale 1997 recommend 5-
25 informants and emphasize the importance of obtaining an overview of the text. The present
study was conducted with five participants.

It is conceivable that the experiences of returning to an elite alpine sport after an ACL injury
gained by these five high school alpine skiers could be transferable to other alpine high school
students with comparable medical and social conditions.
Conclusion

The findings in this study indicate that there are several factors that facilitate a return to elite alpine skiing. The men returned to alpine skiing at pre-injury level, and they reported confidence in their own ability, active strategies, support on all levels and enhanced physical ability. All participants emphasized family support as the most important factor and considered that ideally support should be provided at all levels. To be given time and access to a physiotherapist were crucial.
References


Today 2004;24:105-112.


Table 1. Overview of the content analysis

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<tbody>
<tr>
<td>There is a lot of rehab, that’s the most important thing. You have to have strong knees as an alpine skier. You have to really listen to your knee and if you feel that you’re not ready and if it hurts if you for example, man do tracks”, run on asphalt then you have to think about what you can do to get better. You shouldn’t stress or strain your knee.</td>
<td>Rehab is the most important thing, having strong knees as an alpine skier. Listening to your knee, if you’re not ready and if it hurts, you have to think about what you can do to make it better. Don’t stress your knee.</td>
<td>Rehabilitation important Listen to the knee.</td>
<td>Do rehab Listening to your body.</td>
<td>Perceived opportunities that facilitate a return to alpine skiing.</td>
</tr>
<tr>
<td>It was a real setback; it was a real pain It felt like, I dunno, a bit like the end of the world.</td>
<td>A real setback, a bit like the end of the world.</td>
<td>End of the world.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The one I had then, he was ace. He explained things and helped me; wanted me to understand what it was all about. He really had faith in me and I trusted him. We worked well together.</td>
<td>He was ace, explained and helped. Wanted me to understand. Had faith in me, I trusted him. Worked well together.</td>
<td>Great support Faith in me trusted him Good cooperation.</td>
<td>Having faith in the physiotherapist.</td>
<td></td>
</tr>
</tbody>
</table>

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Appendix - Interview questions

Research questions A. What were their experiences after the ACL injury?
1. Tell me about your experiences when you were injured.
2. Describe the feelings you had for skiing.
   a) From the time of injury until the surgery.
   b) After surgery to six months after surgery.
   c) From six to twelve months after surgery.
3. Tell me about what confidence you had in your own ability to be able to ski after the cruciate ligament injury.
4. Describe your thoughts about your belief in being completely restored after the cruciate ligament injury.
5. Tell me about your feelings when you returned to skiing for the first time after the cruciate ligament injury.
6. Tell me about your feelings when you returned to competitive skiing for the first time after the cruciate ligament injury.
7. Tell me about what your thoughts on strategies were and how you handled the return to skiing after your cruciate ligament injury.

Research question B. What was their experience of the support they were given after the ACL injury?
1. Describe your thoughts and reflections on the support you received to boost your confidence so that you could return to alpine skiing at elite level.
   a) from coaches.
   b) from physiotherapists.
   c) from doctors.
   d) from family.
   e) from friends.

2. Tell me about your thoughts about how support should ideally be provided based on your own experience. What is the best way to boost a person’s confidence in alpine skiing after a cruciate ligament injury.
Research question C. How have the experiences after the ACL-injury affected the participants today?

1. Share your thoughts on how the experiences you had after your anterior cruciate injury affect you today.
2. Describe your feelings towards the alpine skiing today.
3. Tell me about your involvement in alpine skiing today.
4. Describe your physical ability today.
5. Tell me if there is anything you would like to add to what has emerged during the interview.