IJSPT
INTERNATIONAL JOURNAL OF SPORTS PHYSICAL THERAPY

Piussi R, Brandt E, Johansson A, et al. The Patient-Physiotherapist Tango: a Personalized Approach to ACL Recovery – a Qualitative Interview Study. *IJSPT*. 2024;19(12):1589-1599. doi:10.26603/001c.126060

Original Research

The Patient-Physiotherapist Tango: a Personalized Approach to ACL Recovery – a Qualitative Interview Study

Ramana Piussi[1,2a], Ella Brandt[3], Alicia Johansson[3], Thorkell Snaebjörnsson[4], Roland Thomeé[1,3], Kristian Samuelsson[4], Eric Hamrin Senorski[1,2]

[1] Unit of Physiotherapy, Department of Health and Rehabilitation, Institute of Neuroscience and Physiology, Sahlgrenska Academy, University of Gothenburg, Box 455, SE-405 30 Gothenburg, Sweden, [2] Sahlgrenska Sports Medicine Center, Gothenburg, Sweden, [3] Sportrehab Sports Medicine Clinic, Stampgatan 14, SE-411 01 Gothenburg, Sweden, [4] Department of Orthopaedics, Institute of Clinical Sciences, Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

Keywords: person-centered care, qualitative, anterior cruciate ligament, acl, sport injury

https://doi.org/10.26603/001c.126060

International Journal of Sports Physical Therapy

Vol. 19, Issue 12, 2024

Background

Person-centered care is a concept in healthcare that aims to promote the patient's health and adapt resources and interventions based on the patient's needs and wishes. Knowledge on what person-centered physiotherapy is for patients who rehabilitate after an anterior cruciate ligament (ACL) reconstruction, and how patients experience it within the context of sports injury rehabilitation, is lacking.

Purpose

The aim of this study was to explore how patients who were in a late rehabilitation stage (8-12 months) after ACL reconstruction experienced their rehabilitation from a person-centered perspective.

Study Design

Qualitative interview study.

Methods

Fourteen patients (57% females), aged 18-57, treated with ACL reconstruction, were interviewed with semi-structured interviews 8-12 months after ACL reconstruction. Interviews were recorded, transcribed and analyzed with qualitative content analysis.

Results

One theme: all lights on me; be seen and heard, a cornerstone for patients, supported by three main categories: 1) rehabilitation: a roller coaster of physical and psychological challenges; 2) patient involvement; 3) the physiotherapist – stronger together; emerged from the collected data.

Conclusion

Patients in a late rehabilitation stage (8-12 months) after ACL reconstruction experienced that the rehabilitation process was person-centered when they felt to be the focus and were allowed to participate via open and constructive communication with the physiotherapists.

a Corresponding author:
Ramana Piussi,
Address: Sportrehab Sports Medicine Clinic, Stampgatan 14, SE-411 01 Gothenburg, Sweden
ramana.piussi@gu.se, +46761677520

INTRODUCTION

A rupture of the anterior cruciate ligament (ACL) annually affects approximately 8,000 people in Sweden.[1] An ACL injury can negatively impact quality of life for several years, where common complaints include but are not limited to: persistent knee pain, the knee feeling different compared to before the ACL injury, and the adoption of a less active lifestyle.[2-4] Psychological barriers that patients can experience after ACL injury are fear of re-injury, and not trusting the knee.[2] Patients who are physically and mentally prepared for an ACL reconstruction, that is, are optimistic, have greater quadriceps muscle strength, and have high knee self-efficacy have been reported with a better knee function and self-reported quality of life after ACL reconstruction.[2] To enhance post-surgical outcomes it is therefore considered important that physiotherapists identify psychological factors that can be tailored to guide an individualized treatment.[2]

Person-centered care is a concept in healthcare that aims to promote the patient's health and adapt resources and interventions based on the patient's needs and wishes.[5] Person-centered care is about seeing the individual behind the injury and making use of the patient's and relatives' knowledge and experience throughout care. A central concept in person-centered care is partnership, which aims for the care to be planned and carried out in agreement with the patient.[5] Caregivers and patients create a partnership based on the patient's story. A mutual care plan is outlined with implementation strategies and follow-ups of goals.[5] A collaboration between care recipient and care provider leads to the patient gaining greater influence in their rehabilitation, and has been reported to increase compliance and contribute to increased responsibility by the patient.[5] This increased compliance and responsibility can in turn lead to improved perceived health, that is, the patient's own perception of their health status as measured with patient reported outcome measures such as the short form health survey (SF-36), which can result in shorter care times.[5] The implication in the field of ACL injury is that person-centered care could result in better knee-related outcomes as measured with patient reported outcome measures.

Previous qualitative studies have highlighted what patients experience as challenging during recovery after ACL reconstruction.[4,6] One challenging period for patients who recover after ACL reconstruction is the period around the 12-month mark, where patients are commonly gradually discharged from rehabilitation and are supposed to resume unsupervised physical activity (for many patients, return to sport).[7] The results indicate that a person-centered approach might improve mental and physical readiness to return to sports and that more and better information and communication between physiotherapist and patient with regard to realistic goal setting and expectations for rehabilitation is needed.[4,6] Person-centered physiotherapy should have the characteristics of offering an individualized treatment, continuous communication, education during all aspects of treatment, and working with patient-defined goals together with a physiotherapist having social skills, being confident, and showing specific knowledge.[8] However, knowledge on what person-centered physiotherapy is for patients, and how patients experience it within the context of sports injury rehabilitation, is lacking.

Therefore, the aim of this study was to explore how patients who were in a late rehabilitation stage (8-12 months) after ACL reconstruction experienced their rehabilitation from a person-centered perspective.

MATERIAL AND METHODS

STUDY DESIGN AND RECRUITMENT OF SUBJECTS

The present study was conducted as a qualitative interview study. Subjects were recruited from Project ACL, which is a local physiotherapy registry with the purpose to improve care and rehabilitation of patients who suffer an ACL injury. Project ACL aims to improve care through regular muscle function tests as well as questionnaires at pre-defined follow-ups, with ACL injury or reconstruction as a baseline. Results from muscle function tests and questionnaires are shared with patients, treating surgeons, and physiotherapists. Project ACL has been previously described in detail.[9] Ethical approval was obtained from the Swedish Ethical Review Authority (2020-02501). The experience of whether rehabilitation is person-centred can differ between every unique individual. Accordingly, the authors adopted an interpretive/constructivist epistemological approach, which is suitable for studying multiple realities, descriptions, and experiences in a population.[10] An inductive approach was used, which aims to move from specific observation to broad generalizations. The Consolidated criteria for Reporting Qualitative research (COREQ)[11] checklist, an extension of the Standards for Reporting Qualitative Research (SRQR) was used to report methodological information transparently.

Patients aged 18-65, registered in Project ACL and who were between 8-12 months after ACL reconstruction at time of interview were eligible for inclusion. Patients registered with more than one ACL injury were excluded from the study. No exclusion criteria were applied for activity level at present time or pre-injury, associated injuries, or eventual complications during rehabilitation. From patients eligible for inclusion, a purposive sampling selection was used to select patients, ensuring representation across different age groups and sex. This approach aimed to capture the diversity typically seen in open-care physiotherapy settings, focusing on patients undergoing ACL reconstruction. Selected patients from Project ACL were contacted via email and informed about the purpose of the study, and asked whether they were interested in participating. A total of eighteen patients were contacted, of which four declined participations, and consequently, fourteen patients (Table 2) were included in the study, and fourteen interviews were scheduled. There were eight female (57%) and six male patients. Patients were aged 18-57, and for five patients, twelve months had passed from ACL reconstruction, while for nine patients, eight months had passed (Table 2).

Table 1. Interview guide

How did you sustain your ACL injury?
How was your rehabilitation after ACL reconstruction?
What did you experience as challenging during rehabilitation?
What did you experience as easy during rehabilitation?
What made you sad during rehabilitation?
What made you happy during rehabilitation?
What kind of support did you get during rehabilitation?
How often did you meet with your physiotherapist during rehabilitation?
What do you think about the amount of meetings you had with your physiotherapist?
interviewer defines person-centered care
How person-centered did you experience your rehabilitation?
What made your rehabilitation person-centered?
What kind of relation do you have with your physiotherapist?
What role has your physiotherapist had for you during rehabilitation?
Which characteristics of your physiotherapist did you appreciate?
Which characteristics of your physiotherapist did you not appreciate?
How did you and your physio set up goals during your rehabilitation?
What do you feel about the support you received from your physiotherapist?
Do you do any sport today?
What does your sport mean to you?
How has your ACL injury affected your life?
How do you feel in relation to your injury and recovery process today?
What would you change if you could go back in time?
In relation to person-centered care, is there anything else you would like to add?

ACL = Anterior Cruciate Ligament

DATA COLLECTION

An interview guide was created through discussion between authors RP, EB, AJ, and EHS (Table 1). Examples of open-ended questions included "were you involved in your rehabilitation?"; "what in your rehabilitation made it feel person-centered for you?"; "what kind of connection did/do you have with your physiotherapist?". Before subjects received questions about person-centered care, the interviewer provided a definition of person-centered care, in order for patients to grasp the meaning of what the study aimed to understand. The provided definition of person-centered care was: "Patient-centered care is a health care process where you as a patient are involved in the process and an active part of the decision making process. The fundamental characteristics of patient-centered care are: patient involvement in care and the individualization of patient care".[12]

Starting from the interview guide, eventual follow-up questions, such as "could you develop more on …", or "what do you mean by …" were posed when considered needed by the interviewer. The interviews took place digitally via the communication platform ZOOM (ZOOM Inc™ San José, California, USA). Verbal consent was recorded before commencing the interview. Data were collected during autumn 2022 by the first author (RP). The second (EB) or third author (AJ) of the study were present as a spectator. No field notes were taken during or after the interviews and each informant was interviewed only once. No pilot interview was conducted. Interviews were recorded via the ZOOM recording function (mean length 24 minutes, range 18-35 minutes) and transcribed verbatim by the second and third authors (AJ, EB). The recorded files contained no information about the subjects and thus the data was anonymized in the analysis process.

DATA ANALYSIS

The data were analyzed using qualitative content analysis based on Graneheim and Lundman.[13,14] The authors acknowledge that researchers also play a role in the construction of the data, that is, there is no separation between researcher and the data. Since going through such a complicated process (i.e. ACL injury and rehabilitation) is a highly individual experience, the authors believe the choice of individual interviews to be justified. The first (RP), second (EB) and third (AJ) authors of the study were responsible for the analysis process, and the analysis was continuously triangulated with the senior author (EHS). Data were analyzed according to the following steps:

- Transcripts were first read thoroughly to obtain a general understanding of the collected data by all authors involved in the analysis process (RP, EB, AJ, EHS)

Table 2. Age, sex, autograft, and time since ACL reconstruction of the study population.

Informant	Age (years)	Sex	Autograft	Time since ACL-R
1	20	Female	Hamstring	8 months
2	22	Female	Hamstring	12 months
3	18	Male	Hamstring	12 months
4	54	Male	Hamstring	8 months
5	49	Male	Patella	8 months
6	29	Female	Hamstring	8 months
7	23	Female	Patella	8 months
8	22	Female	Hamstring	8 months
9	30	Male	Hamstring	8 months
10	20	Female	Hamstring	8 months
11	57	Male	Hamstring	8 months
12	26	Female	Hamstring	12 months
13	26	Male	Hamstring	12 months
14	18	Female	Hamstring	12 months

ACL-R = Anterior Cruciate Ligament Reconstruction

- Meaning units were identified, extracted and shortened to condensed meaningful units. Condensed meaning units were then abstracted in a Microsoft Excel™ spreadsheet. This step was performed by RP, EB and AJ separately.
- Condensed meaning units were coded. This step was performed by RP, EB and AJ separately.
- Codes were grouped for similarities and differences in sub-categories. During the process of grouping codes in sub-categories transcripts were read again several times and sub-categories were validated against the transcripts, to ensure that data were not missed or erroneously included. The process of grouping codes into subcategories was performed by continuous discussions between RP, EB and AJ until consensus was reached. Up to this stage, authors made a strong effort to minimize interpretation and keep close to the text.
- Sub-categories were grouped for similarities and differences into main-categories. The process of grouping sub-categories into main categories was performed by continuous discussions between RP, EB, AJ and EHS until consensus was reached. At this stage, a minimal interpretation of the content of text was allowed.
- All authors involved in the analysis had extensive discussions to try to elaborate on the patients´ experiences of rehabilitation after ACL reconstruction from a patient-centred perspective. Interpretation of content at this stage was allowed, and finally consensus over a theme was reached.

REFLEXIVITY

Transparency and reflexivity (the process ongoing between the research data and the researchers analyzing the data) are important aspects of the qualitative research paradigm. To increase transparency, Table 3 presents an example of codes and the grouping in sub-categories, as well as main categories. For reflexivity, we report background information concerning authors of the study: the first author (RP) is a male physiotherapist with seven years of clinical experience, and a PhD degree. The second (EB) and third (AJ) authors are female physiotherapists who have a great interest in sports medicine and who used part of the study data as a bachelor thesis. Both the second and third author have suffered an ACL injury, one treated with rehabilitation alone, and one treated with reconstruction. In terms of the other authors, one (RT) is a retired senior physiotherapist (professor) still active in the research field, while KS and TS are senior orthopedic surgeons within sports medicine and ACL reconstructions (professor and PhD degrees). Author KS has suffered two ACL injuries, both in the same knee. The senior author (EHS) is a male senior physiotherapist (associate professor) with over 10 years of clinical experience, and active within the research field. All authors except TS have been involved in Project ACL, either in the development of the project (RT; KS; EHS) or as test supervisors (RP; EB; AJ; EHS). No previous relationship between authors and subjects was present before the start of the study.

RESULTS

One theme, supported by three main categories and eight sub-categories emerged from the collected data (Figure 1).

The rehabilitation experience of patients 8-12 months after ACL reconstruction, from a person-centered perspective, was summarized in one over-arching theme: "*All lights on me – be seen and heard, a cornerstone for patients*".

The subjects that shared their experiences emphasized that personalized rehabilitation focused on them as individuals. They felt empowered to take part in their own recovery process, thanks to open and positive communication with their physiotherapists. The tailored rehabilitation plans aimed to restore their physical abilities contributed

Table 3. Examples of the analysis, from codes to main categories.

Main category	Subcategory	Code
Rehabilitation: a roller coaster of physical and psychological challenges	Motivations, goals and feelings	Tired of rehabilitation; Gave rehabilitation my everything; Having goals ahead gave motivation.
	Injury repercussions	The injury affected my working ability; Impact on social life Did not dare to use the knee.
Patient involvement	Tailored treatment	Rehabilitation adapted to my needs; Try each exercise before implementing; Continuous dialogue with physiotherapist
	Factors giving satisfaction	Reaching goals gives satisfaction; Regaining function gives happiness; Fun becoming strong again.
The Physiotherapist – stronger together	Physiotherapist-patient alliance	Connection with the physiotherapist; Friendly relationship with the physiotherapist; Good cooperation with the physiotherapist.
	Physiotherapist qualities	Committed physiotherapist; Professional physiotherapist; Physiotherapist as a guide.

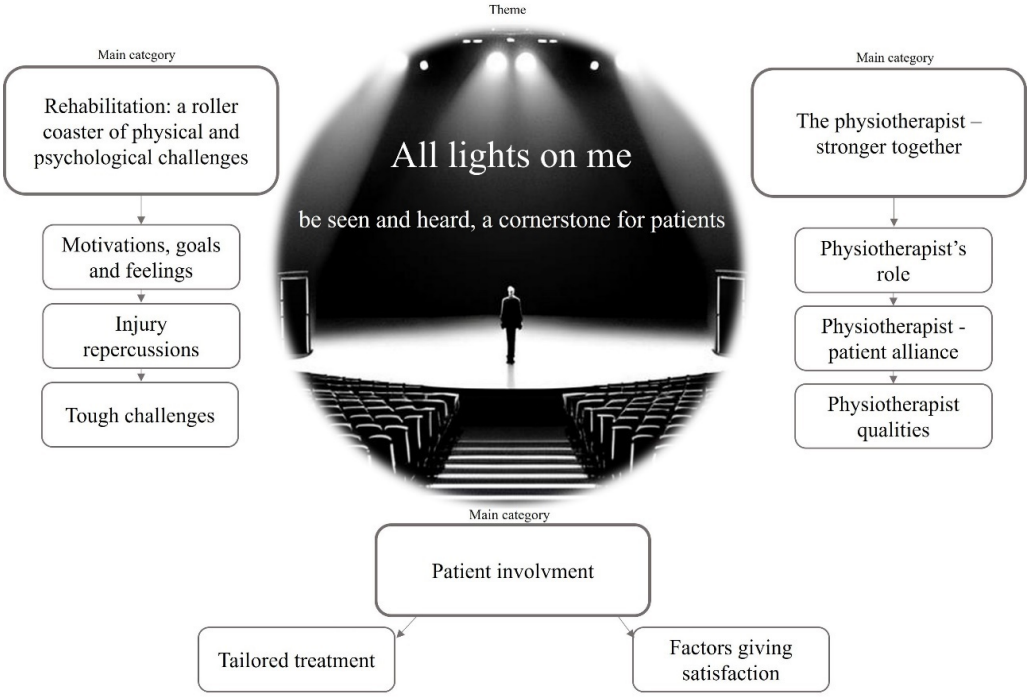

Figure 1. Study results comprising one theme, three main categories, and eight sub-categories.

Image generated with https://getimg.ai/text-to-image

significantly to their sense of a personalized approach. They saw their physiotherapists as guides who provided both emotional and professional support, offered valuable information throughout their rehabilitation. Subjects highlighted the importance of a strong connection with their physiotherapists as a crucial aspect of feeling that rehabilitation was personalized. This 'connection' went beyond the conventional therapeutic relationship and represented a deep human understanding and shared commitment between the subjects and their physiotherapists, which created an atmosphere of trust, open communication, and mutual support throughout the rehabilitation journey. Another key factor was that subjects could actively engage in the rehabilitation journey. Subjects valued the flexibility

and adaptability of the process, tailored to suit each person's unique needs. Overall, personalized rehabilitation after ACL reconstruction was experienced with a high level of satisfaction.

MAIN CATEGORY: REHABILITATION: A ROLLER COASTER OF PHYSICAL AND PSYCHOLOGICAL CHALLENGES.

The rehabilitation after ACL reconstruction was experienced by patients as a process filled with both physical and psychological challenges. One experienced challenge was not being able to participate in social activities due to knee symptoms, which consequently led patients to experience sadness and loneliness. Another challenge that was mentioned was the inability to cope with knee pain, especially early after ACL reconstruction. Some patients described that the pain reminded them that the knee was injured, which led to frustration. A feeling of frustration was also perceived in later stages of rehabilitation; however, it was described as not associated with pain, but rather with the experience that the knee was not as 'good' as it was before the ACL injury. The experience oscillated between moments of frustration and loneliness, transforming into happiness when patients achieved milestones such as regaining knee-related physical abilities (e.g., squatting), reaching set goals, and receiving support from physiotherapists, family, or friends. Thus, this shift created a roller coaster of positive and negative feelings throughout the rehabilitation process.

MOTIVATIONS, GOALS AND FEELINGS

A common goal for the majority of subjects was to be able to return to unlimited physical activity. To achieve goals designed together with the physiotherapist led patients to feel more motivated. Progression in rehabilitation and exercises perceived as fun to execute also contributed to give subjects more motivation. In the absence of clear goal setting or dialogue with the physiotherapist, subjects reported difficulties to find motivation. Some subjects reported that the rehabilitation was too unspecified, and that exercises and dosage were too much self-chosen. Subjects reported to sometimes experience an uncertainty about what subjects were allowed to do, restrictions regarding the knee, as well as unclear training instructions, such as the amount of training and which exercises were to be carried out, which diminished motivation towards rehabilitation. Quote 1, Table 4.

INJURY REPERCUSSIONS

The major reported repercussions on life and rehabilitation were due to knee symptoms. Subjects reported that they felt that the knee as loose, had persistent knee pain, perceived weird feelings in the affected knee, and had to constantly move the knee in order to not perceive stiffness. Some subjects reported to feel fear of re-injury, which contributed to a limitation in that subjects did not dare to be as physically active as before their ACL injury. Quote 2, Table 4.

TOUGH CHALLENGES

There was a variation among subjects about the feeling of loneliness: some subjects felt lonely during rehabilitation while others did not. Another feeling that emerged was an uncertainty about going to the gym to carry out rehabilitation, as the gym was by some experienced as a foreign environment which provided uncomfortable feelings. Overall, to cope with knee symptoms was mentioned as a major challenge. Quote 3, Table 4.

MAIN CATEGORY: PATIENT INVOLVEMENT

One important factor mentioned by patients as a contributor to the experience of person-centered rehabilitation was to be involved in the rehabilitation. To be involved in rehabilitation was described as to be listened to, and foremost, the ability of the physiotherapist to adapt the rehabilitation to patients wishes, desires, and needs. To achieve preset goals led patients to feel involved in the rehabilitation process, and to be the main actor in the process.

TAILORED TREATMENT

One major action performed by physiotherapists, which led patients to perceive the rehabilitation as person-centered, was to tailor rehabilitation. Physiotherapists individually adapted rehabilitation according to subjects' abilities and access to gyms or equipment. Several subjects reported the physiotherapists were flexible with exercises, dosage, and setting; something that made the rehabilitation experienced as fun to carry out. The fact that physiotherapists gave advice and informed patients about what was reasonable regarding rehabilitation were also appreciated contributions. Quote 4, Table 4.

FACTORS GIVING SATISFACTION

To achieve goals, to become strong, to feel that the rehabilitation was moving forward, and to regain physical function were all reported by subjects to be experienced as strongly positive feelings. Patients experienced a great deal of joy and satisfaction when a goal was achieved or when they were physically able to do something that was perceived as "impossible", e.g. hop for distance. Quote 5, Table 4.

MAIN CATEGORY: THE PHYSIOTHERAPIST – STRONGER TOGETHER

In this category, descriptions of experiences of patient-therapist interplay were summarized. Both concrete efforts that physiotherapists made, what the relationship with the physiotherapist was like, and which qualities the subjects appreciated or did not appreciate in their physiotherapist were presented. During interviews, concrete descriptions emerged from subjects about physiotherapists' characteristics and ways of being. The physiotherapists were described as competent, educational, professional, problem-solving, and flexible by several subjects. A good relationship with the physiotherapist and a well-functioning communication

during rehabilitation were described by several subjects as a cornerstone in the physiotherapist-patient alliance. The relationship was described as professional and reasonable, and it was appreciated that subjects received professional answers to their questions.

PHYSIOTHERAPIST'S ROLE

The physiotherapist was described as a guidance, a mentor, and a support during the rehabilitation. Patients perceived the physiotherapist as somebody to follow in order to achieve the final goal with rehabilitation. Subjects experienced the rehabilitation person-centered, despite the physiotherapist having the role of a guidance to follow. Quote 6, Table 4.

PHYSIOTHERAPIST-PATIENT ALLIANCE

Several subjects expressed that their relationship with the physiotherapist evolved into a friendship. Subjects appreciated to share common interests and to engage in conversations about life beyond the scope of the ACL injury. Negative aspects that were raised were that some subjects did not feel that they received enough support. Repeatedly, many subjects highlighted the pivotal and enduring role of the physiotherapist in their rehabilitation journey. They emphasized that forming a strong alliance with the physiotherapist was crucial in shaping their perception of a person-centered rehabilitation experience. Quote 7, Table 4.

PHYSIOTHERAPIST QUALITIES

In the description of physiotherapists qualities, subjects mainly reported positive qualities. Some qualities described were personality traits such as to be interested, engaged, reliable, reassuring and supportive. One informant who changed physiotherapists during rehabilitation experienced the first one as less competent and nonchalant. Quote 8, Table 4.

DISCUSSION

The aim of this study was to explore how patients who were in a late rehabilitation stage (8-12 months) after ACL reconstruction experienced their rehabilitation from a person-centered perspective. The analysis resulted in a single theme, divided into three main categories. Overall, subjects articulated an overarching sense of person-centeredness in their experience of ACL reconstruction rehabilitation. Central to this narrative is the concept of being situated at the core of the rehabilitation process, actively engaged in its unfolding. Participants expressed a pronounced contentment with the rehabilitation post-ACL reconstruction, underscoring the pivotal role of the physiotherapist as a supportive figure throughout the recovery journey.

MAIN CATEGORY: REHABILITATION: A ROLLER COASTER OF PHYSICAL AND PSYCHOLOGICAL CHALLENGES

In this main category the subjects' experiences of the rehabilitation process were summarized. The rehabilitation after ACL reconstruction is long and it is not uncommon that the time period stretches over 12 months.[15] The period between 8-12 months is important as patients approach resuming unrestricted activities and might face both mental and physical set-backs. Patients' experiences during this period become an important piece to inform tailoring patient support strategies. Subjects reported to perceive this period like a roller coaster where some moments were experienced as positive, i.e. fun exercises to perform, while others as negative, i.e. feeling lonely due to the inability to participate in social activities. The experiences of subjects in the present study are consistent with other reported experiences of rehabilitation after ACL reconstruction. During rehabilitation patients have been reported to struggle with expectations of full recovery,[4] fear of re-injury, and perceived inferior knee function.[16,17] In addition, patients have been reported to have difficulty regaining both physical and mental balance.[18]

The rehabilitation after ACL reconstruction is a challenging period where patients go through both positive and negative loaded moments. In light of the rollercoaster-like nature of the rehabilitation process reported by subjects, clinicians working with individuals before and after ACL reconstruction should acknowledge and address the dynamic and fluctuating nature of their experiences. Recognizing that this rehabilitation journey extends over a prolonged period, often surpassing 12 months, clinicians can prepare patients for the emotional highs and lows inherent in the process. To prepare patients clinicians can stay up to date with current best evidence, provide realistic timelines, set achievable milestones, and foster open communication to manage expectations.[19] Psychological support and realistic goal-setting during the 8-12 months period are important to maintain motivation and adherence to rehabilitation.[20] It becomes important for healthcare professionals to accentuate the reported positive moments, such as enjoyment in engaging exercises, and concurrently, acknowledge the challenges, including feelings of isolation and frustration due to social limitations. Thus, insights provided in this study underscore the importance of tailoring support to the individual needs of patients during the extended rehabilitation period before and especially after ACL reconstruction. Using this information, clinicians can play a pivotal role to facilitate a more resilient and positive rehabilitation journey for their patients.

MAIN CATEGORY: PATIENT INVOLVEMENT

Subjects reported that being involved in rehabilitation was important to experience rehabilitation as person-centered. To be involved in rehabilitation was described as being listened to, and when the rehabilitation was adapted to a patient's wishes. Even the achievement of goals made subjects experience rehabilitation as person-centered, and made subjects feel very satisfied. Physiotherapists working

Table 4. Quotes from each sub-category. Quote number within brackets.

Subcategory (quote number)	Quote
Motivations, goals and feelings during rehabilitation (1)	I noticed a difference pretty quickly. The right exercises made it easy, so it was good exercises that made the rehabilitation easier. And when rehabilitation got easy, I felt more motivated.
Injury repercussions on life and rehabilitation (2)	I was very sensitive and I had a lot of pain in my knee… And I still have pain in my knee. But it is getting better now. I have had quite a few problems with my knee after the operation. Because we have had to step back in my rehab to decrease pain. Then, we progressed again, but it did not work. And again… and it was like that, back and forth for a while.
Tough challenges (3)	It can hit you hard… when you cannot meet your friends who are going to the park because you cannot walk… You can feel so helpless.
Tailored treatment (4)	We have adapted how much I train and what I do, type of exercises, to what I can do at home or what kind of equipment I have and then according to what I have access to… And then also how I, how I have started to go back to football training and how much I get to train there.
Factors giving satisfaction (5)	And then you have the progress… that all of a sudden I could jump sideways on one leg. If it had been before the operation, I would have collapsed like a house, right? So to jump sideways on one leg made me so happy… that I have been able to do, do things that I was not able to do for years before the surgery.
Physiotherapist's role (6)	I have of course done all the exercises, but he (the physiotherapist) has been the one who has been responsible for seeing the progress… and has pushed me as well. To actually challenge myself, and actually do what is required and not only the least possible. So I would say that he (the physiotherapist) has had a big role, that he has kind of pushed me to do the right things. And in the right amount.
Physiotherapist-patient alliance (7)	It (the relationship with the physiotherapist) is very easy going and positive. I can ask any number of stupid questions like that, and still expect a professional answer. I have a good relationship with my physiotherapist.
Physiotherapist qualities (8)	I mean, he (the physiotherapist) is so interested (in me). He is very involved in…. I understand that he has a lot of patients, but he takes it very personally and seriously. It feels, sometimes it feels like I'm his only patient.

in a sport setting have reported goal-setting to be a helpful challenge, since reaching goals is believed to give patients motivation.[21] Importantly, goal-setting, and goal achievement has an impact on outcomes such as muscle strength and is much appreciated by patients.[22,23] There is low quality evidence with moderate effect that the goal-setting process in rehabilitation is better than no goal setting for improving health-related quality of life or self-reported emotional status.[24] Consequently, the use of goal-setting within ACL reconstruction rehabilitation should be encouraged and implemented. In the 8-12 month time frame patient should be involved in sport-specific goal setting, as this is the period in which patients are supposed to transition back to sport or daily activities.

To enable participation and involvement in rehabilitation, the patient should be given relevant information about both care and treatment measures. In addition, patients need to be asked how they would want to be involved in rehabilitation. The rehabilitation needs then to be tailored based on the patient's conditions and wishes. It is, however, highly individual how much influence a patient wants to have on his/her rehabilitation. Where some patients do have precise desires, others might want to leave all decisions up to the physiotherapist. Accordingly, it is important for physiotherapists to value patients' own input: make patients a part of the rehabilitation and allow them to share their own beliefs and wishes towards the rehabilitation process.

MAIN CATEGORY: THE PHYSIOTHERAPIST – STRONGER TOGETHER

Subjects reported that communication with the physiotherapist was important and allowed patients to build a relationship with the caregiver. Being clinically courageous has been described as an important characteristic needed to apply person-centered care.[25] Clinically courageous means that the conversation is facilitated by the therapist through the use of open conversations, which can make it easier for the patient's story to emerge. It is important that the therapist possesses certain qualities to tailor rehabilitation to be person-centered; technical expertise, emotional intelligence and personality, self-confidence and ability to inspire trust.[25] A suggestion on how to effectively communicate with patients has been proposed.[19] To effectively communicate, and to establish an environment where the patient feels cared for is one important part to increase the likelihood of positive outcomes of rehabilitation.[26] Thus, it is important that there is an awareness of what qualities are required in a physiotherapist to tailor rehabilitation to be person-centered. Since good communication is a cornerstone of patient-centered care,[25] it is important that physiotherapists reflect on their communication qualities, to create an awareness of their professional approach. In the 8-12 month time frame, patients begin to resume more challenging activities. Thus, maintaining a strong, communicative relationship with the physiotherapist is essential

for individualized adjustments and to address eventual concerns, such as fear of re-injury.[27]

METHOD DISCUSSION

To answer the research question, individual interviews were deemed to be a suitable data collection method. Qualitative content analysis was chosen, as this is suitable when it comes to providing access to each participant's subjective experience of a certain event. Since we believe it impossible for the researcher to be completely detached from the data, the description according to Graneheim and Lundman was adopted.[13,14] Accordingly, data are obtained through interactions between the researcher, the participants, and the analyzed text.

Within the description of Graneheim and Lundman[13, 14] trustworthiness is a central notion. Trustworthiness is further divided into three core concepts: credibility, dependability and transferability. To establish credibility, the researchers must describe the research participants accurately, however, in a way that ensures confidentiality. On the other hand, the researchers involved are described in accordance with the COREQ domains, to allow the reader to be able to assess how background information might have influenced the results. Dependability refers to the certainty of the analytical process and the stability of the data over time. To ensure dependability in this case, the interview guide was developed before the study started and not changed afterwards.

LIMITATIONS

One important consideration in qualitative research if whether enough data has been collected to answer the study aim. To ensure enough data is collected, the researchers assessed whether new information (sub-categories) emerged from each interview as the analysis was performed. In the last three interviews, no new sub-categories emerged. Therefore, despite the relatively small sample (14 participants), authors believe the data was rich enough to describe patients´ experiences of person-centered care during rehabilitation after ACL reconstruction. Furthermore, a limitation is the variation in expectations regarding outcomes of late-stage rehabilitation based on age, as older patients may have different rehabilitation goals and timelines compared to younger patients. While age-related differences expectations are important, the aim was to capture the wide range of experiences that physiotherapists encounter in their daily practice. By including patients across diverse age groups, the authors sought to reflect the real-world variety in expectations and rehabilitation outcomes rather than focusing on a specific demographic. Another limitation can be the transferability of findings. Transferability refers to the potential for extrapolating the results to other groups and/or situations. Transferability is not always the aim with qualitative research and must be assessed by the reader. The current purpose was to explore how patients who were in a late rehabilitation stage after ACL reconstruction experienced their rehabilitation from a person-centred perspective, and results should be interpreted with caution.

CLINICAL IMPLICATIONS

The results highlight that patients felt most supported when actively involved in their rehabilitation, particularly through clear communication and individualized goals. Physiotherapists may consider fostering a partnership with patients by regularly discussion of progress, adaptation of exercises to suit individual needs, and to set personalized, achievable goals. While specific approaches may vary, this patient-centered strategy could help physiotherapists support patients during the challenging late-stage rehabilitation after ACL reconstruction. These practices may improve patient satisfaction and engagement, ultimately enhancing rehabilitation outcomes

SUMMARY

Subjects in a late rehabilitation stage (8-12 months) after ACL reconstruction experienced that a rehabilitation process was person-centered when they were the focus of rehabilitation and were encouraged to participate via open and constructive communication with the physiotherapists. Physiotherapists working with patients who rehabilitate individuals after ACL reconstruction are encouraged to make patients an active part of the rehabilitation by using open and constructive communication.

FUNDING DETAILS

Fundings for this study were received from the Research & Development Centre Gothenburg and Södra Bohuslän.

DISCLOSURE STATEMENT

Author KS is a board member for Getinge AB (publ), all other authors declare no conflicts.

DATA AVAILABILITY STATEMENT

Data is available from the corresponding author upon reasonable request.

Submitted: April 26, 2024 CST, Accepted: September 21, 2024 CST

REFERENCES

1. Nordenvall R, Bahmanyar S, Adami J, Stenros C, Wredmark T, Felländer-Tsai L. A population-based nationwide study of cruciate ligament injury in Sweden, 2001-2009: incidence, treatment, and sex differences. *Am J Sports Med*. 2012;40(8):1808-1813. doi:10.1177/0363546512449306

2. Filbay SR, Grindem H. Evidence-based recommendations for the management of anterior cruciate ligament (ACL) rupture. *Best Pract Res Clin Rheumatol*. 2019;33(1):33-47. doi:10.1016/j.berh.2019.01.018

3. Ardern CL, Taylor NF, Feller JA, Webster KE. Fifty-five per cent return to competitive sport following anterior cruciate ligament reconstruction surgery: an updated systematic review and meta-analysis including aspects of physical functioning and contextual factors. *Br J Sports Med*. 2014;48(21):1543-1552. doi:10.1136/bjsports-2013-093398

4. DiSanti J, Lisee C, Erickson K, Bell D, Shingles M, Kuenze C. Perceptions of rehabilitation and return to sport among high school athletes with anterior cruciate ligament reconstruction: A qualitative research study. *J Orthop Sports Phys Ther*. 2018;48(12):951-959. doi:10.2519/jospt.2018.8277

5. Ekman I. *Personcentrering inom hälso- och sjukvård: från filosofi till praktik*. Liber; 2020.

6. Heijne A, Axelsson K, Werner S, Biguet G. Rehabilitation and recovery after anterior cruciate ligament reconstruction: patients' experiences. *Scand J Med Sci Sports*. 2008;18(3):325-335. doi:10.1111/j.1600-0838.2007.00700.x

7. Lai CCH, Ardern CL, Feller JA, Webster KE. Eighty-three per cent of elite athletes return to preinjury sport after anterior cruciate ligament reconstruction: a systematic review with meta-analysis of return to sport rates, graft rupture rates and performance outcomes. *Br J Sports Med*. 2018;52(2):128-138. doi:10.1136/bjsports-2016-096836

8. Wijma AJ, Bletterman AN, Clark JR, et al. Patient-centeredness in physiotherapy: What does it entail? A systematic review of qualitative studies. *Physiother Theory Pract*. 2017;33(11):825-840. doi:10.1080/09593985.2017.1357151

9. Hamrin Senorski E, Samuelsson K, Thomeé C, Beischer S, Karlsson J, Thomeé R. Return to knee-strenuous sport after anterior cruciate ligament reconstruction: a report from a rehabilitation outcome registry of patient characteristics. *Knee Surg Sports Traumatol Arthrosc*. 2017;25(5):1364-1374. doi:10.1007/s00167-016-4280-1

10. Denzin NK, Lincoln YS. *The Sage Handbook of Qualitative Research*. sage; 2011.

11. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int Jour Qual Health C*. 2007;19(6):349-357. doi:10.1093/intqhc/mzm042

12. Robinson JH, Callister LC, Berry JA, Dearing KA. Patient-centered care and adherence: Definitions and applications to improve outcomes. *J Am Acad Nurse Pract*. 2008;20(12):600-607. doi:10.1111/j.1745-7599.2008.00360.x

13. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*. 2004;24(2):105-112. doi:10.1016/j.nedt.2003.10.001

14. Graneheim UH, Lindgren BM, Lundman B. Methodological challenges in qualitative content analysis: A discussion paper. *Nurse Educ Today*. 2017;56:29-34. doi:10.1016/j.nedt.2017.06.002

15. Burgi CR, Peters S, Ardern CL, et al. Which criteria are used to clear patients to return to sport after primary ACL reconstruction? A scoping review. *Br J Sports Med*. 2019;53(18):1154-1161. doi:10.1136/bjsports-2018-099982

16. Ivarsson A, Johnson U, Karlsson J, et al. Elite female footballers' stories of sociocultural factors, emotions, and behaviours prior to anterior cruciate ligament injury. *Int J Sport Exerc Psychol*. 2019;17(6):630-646. doi:10.1080/1612197X.2018.1462227

17. Burland JP, Howard JS, Lepley AS, DiStefano LJ, Lepley LK, Frechette L. What are our patients really telling us? Psychological constructs associated with patient-reported outcomes after anterior cruciate ligament reconstruction. *J Athl Train*. 2020;55(7):707-716. doi:10.4085/1062-6050-120-19

18. Karlström J, Wiklund M, Tengman E. Disrupted knee - disrupted me: a strenuous process of regaining balance in the aftermath of an anterior cruciate ligament injury. *BMC Musculoskelet Disord*. 2022;23(1):290. doi:10.1186/s12891-022-05252-6

19. Piussi R, Ivarsson A, Johnson U, Senorski EH. Psychological factors in sports injury rehabilitation: how can a sports rehabilitation practitioner facilitate communication? *JOSPT Open*. 2024;2(1):1-3. doi:10.2519/josptopen.2023.0007

20. Brewer BW, Van Raalte JL, Cornelius AE, et al. Psychological factors, rehabilitation adherence, and rehabilitation outcome after anterior cruciate ligament reconstruction. *Rehabil Psychol*. 2000;45(1):20-37. doi:10.1037/0090-5550.45.1.20

21. Piussi R, Krupic F, Senorski C, et al. Psychological impairments after ACL injury - Do we know what we are addressing? Experiences from sports physical therapists. *Scand J Med Sci Sports*. 2021;31(7):1508-1517. doi:10.1111/sms.13959

22. Johnson U. Short-Term Psychological Intervention: a study of long-term-injured competitive athletes. *J Sport Rehabil*. 2000;9(3):207-218. doi:10.1123/jsr.9.3.207

23. Johnson U, Ivarsson A, Karlsson J, Hagglund M, Walden M, Borjesson M. Rehabilitation after first-time anterior cruciate ligament injury and reconstruction in female football players: a study of resilience factors. *BMC Sports Sci Med Rehabil*. 2016;8(1):20. doi:10.1186/s13102-016-0046-9

24. Levack WM, Weatherall M, Hay-Smith JC, Dean SG, McPherson K, Siegert RJ. Goal setting and strategies to enhance goal pursuit in adult rehabilitation: summary of a Cochrane systematic review and meta-analysis. *Eur J Phys Rehabil Med*. 2016;52(3):400-416.

25. Naylor J, Killingback C, Green A. What are the views of musculoskeletal physiotherapists and patients on person-centred practice? A systematic review of qualitative studies. *Disabil Rehabil*. Published online 2022:1-12. doi:10.1080/09638288.2022.2055165

26. Ekstrand J, Lundqvist D, Davison M, D'Hooghe M, Pensgaard AM. Communication quality between the medical team and the head coach/manager is associated with injury burden and player availability in elite football clubs. *Br J Sports Med*. 2019;53(5):304-308. doi:10.1136/bjsports-2018-099411

27. Little C, Lavender AP, Starcevich C, et al. Understanding fear after an anterior cruciate ligament injury: a qualitative thematic analysis using the common-sense model. *Int J Environ Res Public Health*. 2023;20(4). doi:10.3390/ijerph20042920