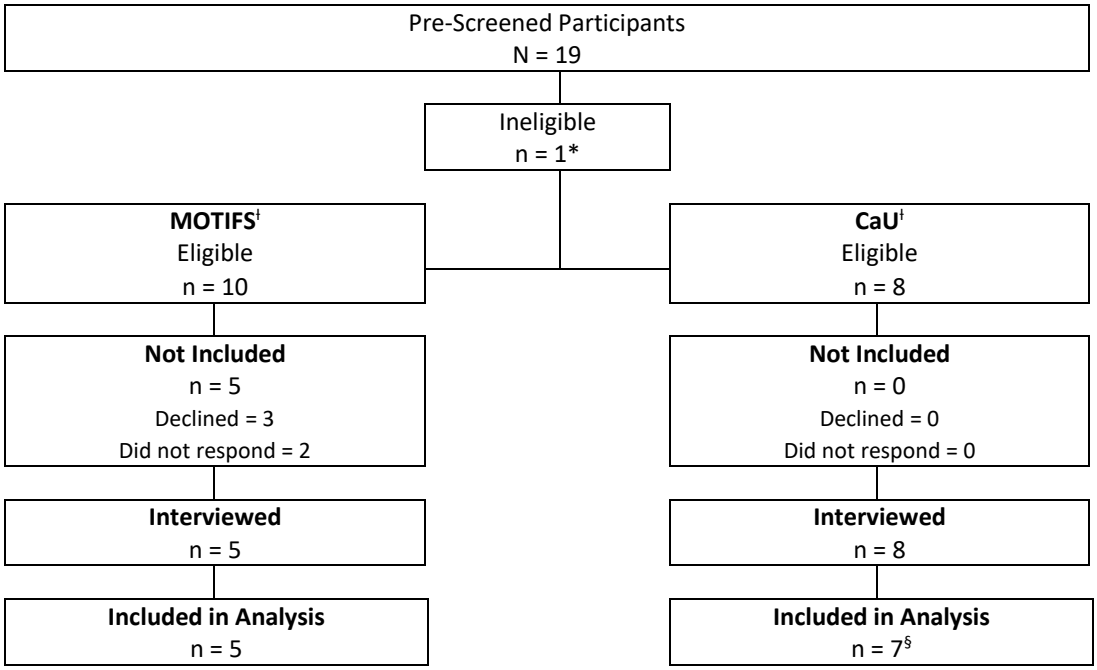
Lived Experiences of Patients Undergoing Treatment for Traumatic Knee Injury Using Integrated Psychological Training (MOTIFS) in the Context of Care-as-Usual Training: A Phenomenological Interview Study – Appendix 1: Data Collection and Processing

METHODS

Data Collection and Processing

Participants were pre-screened for eligibility based on their involvement in the MOTIFS RCT, and those that were eligible were contacted by telephone. Participants in the RCT are randomized based on the clinic at which they are undergoing rehabilitation to receive either MOTIFS or Care-as-Usual.(1) A participant flow diagram for the current interview study is available in Figure 1. Information provided to participants was the same regardless of treatment arm, and included that the aim of the study was to explore patient experiences of rehabilitation. No explicit reference was made to the MOTIFS model, nor to generic psychological training techniques or outcomes.



MOTIFS = Motor Imagery to Facilitate Sensorimotor Re-Learning; CaU = Care-as-Usual
**Reason for ineligibility: Current (i.e. not completed) participation in the RCT*
† All eligible participants were approached for participation in the interview
§ Reason for non-inclusion in analysis: Data saturation reached

Figure 1 - Participant Flow Diagram

Interviews were conducted and subsequently transcribed verbatim in Swedish by the first author, fluent in Swedish. Notes were taken during the interview to record body language, pauses, and other speech patterns deemed potentially relevant; this was repeated during the transcription, as video

was available due to having recorded the interviews digitally. Transcriptions therefore contain notes to reflect this (i.e. laughing, or speaking slowly to carefully select words). Once transcribed, the first author ensured correct transcription, corrected mistakes, and anonymized by removing references to people or places. Following this, meaning units were identified by removing filler words (i.e. "like," "umm," etc.) and inductively evaluating each sentence to identify individual units which bear meaning. Each unit was then placed on an individual row. This was then uploaded into the NVivo data analysis software program and prepared for coding.

Inductive coding was performed using a coding reliability thematic analysis approach(2) grounded in Interpretive Phenomenological Analysis (IPA). IPA aims to decode experiences, interpret individual context of the phenomenon (i.e. rehabilitation following knee injury) to be explored, and identify unique aspects of the phenomenon in question.(3) It was deemed necessary to emphasize focus on decoding patient experiences by identifying the themes which are present in participant responses to ensure a conceptual model which reflects the lived experiences using coding reliability thematic analysis. This is in order to provide a clear picture of not only how, but also what the patients experience from a more objective perspective, resulting in evaluating coding reliability. This resulted in a coding process including aspects of thematic analysis.(2) As it is also necessary to evaluate more objectively what is perceived, this also included an approach in which coding reliability is evaluated by involving several coders.(2) A similar analysis approach which combines aspects of thematic analysis and IPA has previously been described.(4) We are here using coding reliability as a secondary method of ensuring quality and agreement in the themes presented, with results of the IPA analysis being the main outcome.

In practice, coding included careful reading of the material, followed by coding to a major theme, in which broad meaning is applied (physical or psychological, for example) to an overarching concept.(2) Thereafter, another thorough reading identified more specific theories or concepts based on existing literature which are represented by the response, with more focus on the meaning behind the statement.(2) Each meaning unit was coded to at least subordinate theme 2, with each new theme being defined and noted as it appeared. Definitions and notes were written in English by the first author (native American English speaker fluent in Swedish). Coders 2 and 3 (native Swedish speakers) are fluent in English with high enough comprehension to understand code definitions.

Upon coding n=3 interviews and establishing a preliminary conceptual model, one interview was sent to coder 2 (SG) to deductively code using preliminary a priori codes up to subordinate theme 2. Along with this, an instruction sheet was provided, including theme definitions. Agreement was evaluated using NVivo's Coding Comparison Query to compare inter-coder agreement of number of characters coded to each theme, indicated by a kappa value, with acceptable agreement set at k=0.61 (Table 1). Disagreements in the case of unacceptable agreement were discussed between coders to adjust terminology and definitions for clarity. This was repeated with coder 3 (EA) until all coders were in agreement.

Evaluating inter-coder agreement is a method of auditing the conceptual model to ensure that one coder's bias did not prevent reliable coding, and to ensure that the model is representative of participant responses. Including 3 coders with different backgrounds also provided a method of reducing bias and ensuring rigor, as 2 coders (NC and SG) have experience with qualitative interview studies and expertise in sport psychology, while coder 3 is an established researcher and expert in physical therapy. This method is not without issue, however, and bias, individual experience, and chance may still influence coding agreement.(6) However, this provides several different points of view, and increases the likelihood that participant responses are accurately represented and are understandable by the target audience, that is clinically active physical therapists.

Table 1– Progression of coding comparison analyses through versions of the generated conceptual models

Conceptual Model	Coder Comparison	Version 1	Version 2	Final Model
MOTIFS	Coder 1- Coder 2	k = 0.47	k = 0.51	k = 0.75
	Coder 1- Coder 3	N/A	N/A	k = 0.69
	Coder 2- Coder 3	N/A	N/A	k = 0.68
Care-as-Usual	Coder 1- Coder 2	k = 0.53	k = 0.52	k=0.66
	Coder 1- Coder 3	N/A	N/A	k=0.68
	Coder 2- Coder 3	N/A	X*	k=0.64

The Final Model is the result of discussing the previous version, with no significant changes to the model.
MOTIFS = Motor Imagery to Facilitate Sensorimotor Re-Learning
k = Cohen's Kappa, in which agreement was classified as none (k≤0), none to slight (k=0.01-0.20), fair (k=0.21-0.40), moderate (k=0.41-0.60), substantial (0.61-0.80), and perfect (k=0.81-1); N/A = Not Applicable – coding comparison not available or not necessary
X – Coding not compared due to unacceptable agreement between Coders 1 and 2*

Once agreement was reached, coding continued with the remaining interviews until data saturation was reached. This was defined as the point at which the model was stable, and coding two new interviews contributed no new codes nor major changes to the conceptual model. Slight modifications were allowed, as long as no new codes were added to the first three theme levels, and theme definition clarification did not change the meaning of the theme. This was allowed in order to maintain a rich and nuanced interpretation of results when coding to more detailed theme levels. The final model was then synthesized based on results of the coding comparison query and coder discussions. Presentation included themes up to Subordinate Theme 3, and all coders came to agreement on this final model. Example quotations were translated by the first author and were cross-culturally adapted to ensure meaning was not lost in translation.

REFERENCES

1. Cederström N, Granér S, Nilsson G, Dahan R, Ageberg E. Motor Imagery to Facilitate Sensorimotor Re-Learning (MOTIFS) after traumatic knee injury: study protocol for an adaptive randomized controlled trial. Trials. 2021;22(1):729-42.
2. Braun V, Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? Qual Res Psychol. 2021;18(3):328-52.
3. Pietkiewicz I, Smith JA. A practical guide to using Interpretative Phenomenological Analysis in qualitative research psychology. Czas Psychol. 2014;20(1):7-14.
4. Sundler AJ, Lindberg E, Nilsson C, Palmér L. Qualitative thematic analysis based on descriptive phenomenology. Nursing Open. 2019;6:733-9.
5. QSR International Pty Ltd. NVivo (Released March 2020). https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home; 2020.
6. Smith B, McGannon KR. Developing rigor in qualitative research: problems and opportunities within sport and exercise psychology. Int Rev Sport Exerc Psychol. 2018;11(1):101-21.