

Redesigning Recovery

Making Sports Rehabilitation Accessible and Affordable

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2025

Executive Summary

Sports rehabilitation is critical for safe recovery and long-term performance, yet financial, geographical, and motivational barriers often limit access to professional guidance and equipment. This research combined surveys of AFL players, an interview with a physiotherapist, and benchmarking of existing products to identify key gaps. Findings show professional equipment is often inaccessible, home-based tools are limited in versatility, and app-based programs lack physical feedback.

The research highlights opportunities for low-cost, user-centred, portable, and adaptive rehabilitation solutions that support progression across all stages of recovery. Such innovations can empower athletes to manage their rehabilitation effectively, improve adherence, and bridge the gap between professional physiotherapy and independent recovery, enhancing outcomes and promoting equitable access.

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Introduction

We often hear about the injuries that athletes suffer, but what we rarely see is the work that happens behind the scenes, the dedication, discipline, and commitment required to recover. Sports rehabilitation is a major part of the sporting world, yet it is often underestimated or overlooked (Kennedy, 2015).

Many assume that rehab is simply a matter of rest and recovery, but in reality, it is a complex and demanding process that can present significant challenges. With thousands of amateur sporting competitions taking place across Australia, injuries are a common occurrence (Bonner et al., 2017). For some athletes, recovery is supported by access to professional services and specialist equipment. For others, however, these resources are out of reach, making the road to recovery far more difficult (Australian Physiotherapy Association [APA], 2021).

Barriers such as cost, limited availability of services, and lack of adequate resources can significantly affect the quality of rehabilitation. Those living in rural or regional areas often face restricted access to facilities compared to athletes in urban centres (HealthTimes, 2023). Financial pressures can also prevent individuals from seeking professional help, as physiotherapy and rehabilitation services are often expensive (Kennedy, 2015). On top of this, effective rehab requires consistent commitment, something that can be difficult to maintain when combined with challenges such as limited access and high costs (Bonner et al., 2017).

This project looks to identify and outline the major barriers to sports rehab through the research of both primary and secondary sources. Through this research, the aim is to "explore the design of a low-cost, user-centred sports rehabilitation product or system to improve recovery outcomes for individuals with limited access to professional physiotherapy services and adequate rehabilitation equipment."

There is a clear need for affordable, portable, and user-friendly solutions that allow individuals to take control of their recovery journey. Without proper treatment, sports injuries can lead to long-term health complications, hinder performance, and reduce quality of life (Kennedy, 2015). Furthermore, the lack of accessible rehab services widens inequality in recovery outcomes, and many athletes are forced to rush back into competition without completing proper rehabilitation, increasing the risk of reinjury (APA, 2021b).

By addressing these gaps, this project seeks to create innovative, inclusive solutions that make effective sports rehabilitation accessible to everyone, regardless of location or financial situation (Bonner et al., 2017).



Figure 1: Project Overview

In order to identify gaps in the current market and possible design directions, research into the sports rehabilitation process and available equipment is necessary. This involves drawing on both primary and secondary data to capture a broad overview. Sports injuries are common across all levels of participation, from amateur to elite performance, and they often require structured rehabilitation to enable safe recovery. Without correct treatment, even relatively minor injuries can lead to long-term complications, reduced performance, and ongoing health issues (Campbell, 2021).

Rehabilitation is a critical stage of recovery, and contrary to common belief, it is not simply a matter of resting before returning to play. Instead, it is a staged, highly structured process that requires consistency, progression, and adherence to medical guidance (Cheung, 2025). Skipping or rushing through stages significantly increases the risk of reinjury and long-term setbacks. A typical rehabilitation process can be outlined as follows:

1. Diagnosis & Initial Scans – identifying the extent and nature of the injury.
2. Acute Phase (0–72 hrs) – rest, ice, compression, elevation (RICE), pain management, and protection of the injury.
3. Early Rehabilitation (3 days–2 weeks) – gentle mobility work, stretching, and light isometric exercises guided by physiotherapy.
4. Strengthening Phase (2–6 weeks) – progressive resistance training using bands, foam products, or bodyweight exercises to rebuild strength and stability.
5. Advanced Rehabilitation (6–12 weeks) – balance, agility, and sport-specific drills to restore functional performance.
6. Return-to-Sport (12+ weeks) – monitored reintroduction to training and competition, ensuring full recovery and reducing reinjury risk.
7. Long-Term Maintenance – ongoing conditioning, flexibility, and prevention programs to support long-term performance and durability (Cheung, 2025).

Despite its importance, access to effective rehabilitation is not equal. Financial barriers are a major obstacle, with physiotherapy sessions and extended treatment plans often proving too costly for individuals to sustain. This can result in incomplete recovery or avoidance of treatment altogether (Australian Physiotherapy Association [APA], 2021). Geographical factors also contribute, particularly for those living in rural or remote areas where specialist services are scarce, requiring long and costly travel to access care (Bonner et al., 2017). In addition, many rehabilitation programs rely on equipment that is not readily available outside clinical or gym settings. Lack of access to tools such as resistance bands, foam rollers, or specialised devices can make it difficult for individuals to follow prescribed programs properly, limiting recovery outcomes (Varghese, 2024).

These accessibility challenges highlight the need for affordable, portable, and user-friendly rehabilitation solutions. Literature suggests that low-cost methods, such as elastic resistance bands, foam products, modular devices, and bodyweight exercises, are effective alternatives that can be integrated into different phases of recovery (Varghese, 2024). Similarly, self-guided and home-based rehabilitation programs have shown strong potential when supported by structured guidance. These approaches reduce financial and geographical barriers while offering flexibility to fit around daily routines. However, adherence is often an issue, with individuals struggling to stay motivated or unsure of exercise technique without professional oversight (Cheung, 2025).

To address these challenges, user-centred design in rehabilitation equipment is crucial. Designing products that are intuitive, adaptable, and supportive of individual needs encourages adherence, boosts confidence, and allows athletes to recover effectively outside traditional clinical environments (Varghese, 2024). By bridging the gap between professional physiotherapy and self-managed care, such solutions can enhance recovery outcomes and ensure more equitable access to rehabilitation.

In summary, sports rehabilitation is a structured and essential process that underpins both safe recovery and long-term performance. Yet barriers such as cost, geography, and lack of equipment continue to prevent many individuals from accessing effective treatment. Emerging evidence points toward affordable, accessible, and user-centred solutions as a means of addressing these gaps. This presents a clear opportunity for innovation in rehabilitation design, particularly in developing portable, low-cost tools that empower individuals to recover safely and sustainably (Varghese, 2024).

Current sports rehabilitation products can be broadly grouped into three categories:

-
- PRICE
- Professional Physio Equipment
- At-home Rehab Equipment
- App Based Rehab Programs
- ACCESSIBILITY
- miro

Accessibility remains a key limitation across many existing solutions. Products that are costly, complex, or only available in specialised settings reduce the likelihood of consistent use, directly affecting recovery outcomes (Merlin Health, 2023). To benchmark these categories, one product from each will be analysed against price, accessibility, functionality, and versatility: the Smith Machine (professional equipment), resistance bands (at-home equipment), and physiotherapy app programs (digital tools) (Brown, 2025).

Professional Physiotherapy Equipment – Smith Machine

The Smith Machine is a fixed barbell that moves along a guided track, allowing safe performance of various strengthening exercises (Merlin Health, 2023). Its versatility makes it effective for rehab, as exercises can be adapted to different injuries and gradually increased in difficulty (Pavan, 2024). However, accessibility is a major limitation. The Smith Machine is expensive, bulky, and usually only found in gyms or clinics, restricting its use to those with access to these facilities (Merlin Health, 2023). Its benefits include supporting progressive strength and mobility gains, but the high cost and limited availability reduce consistent engagement (Pavan, 2024).

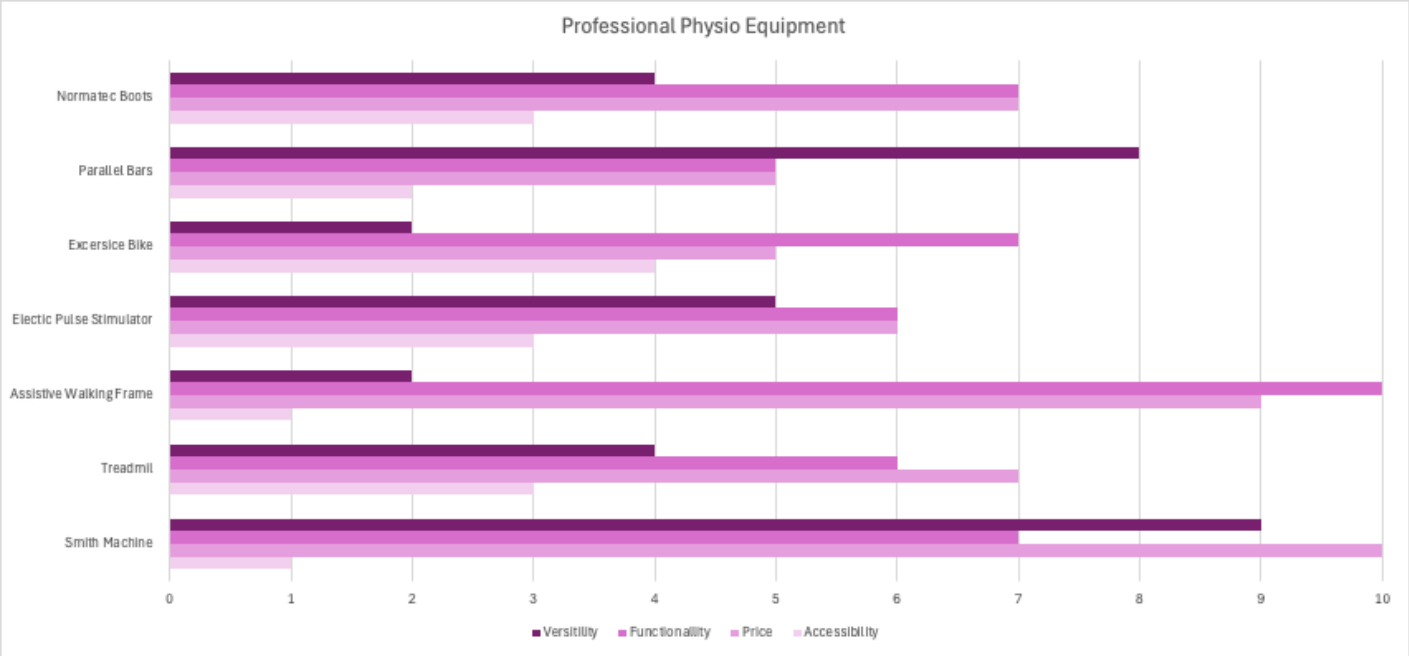


Figure 3: Comparison of Professional Rehab Equipment

At-Home Rehab Equipment – Resistance Bands

Resistance bands are widely used for home-based rehab (Meyer, 2025). They are simple, versatile, and enable a variety of movements for strengthening and recovery (Galloway, 2025). Varying band thickness allows users to gradually increase resistance, supporting progression throughout rehabilitation (Polish, 2023). Their key advantages are affordability, portability, and accessibility. Bands are lightweight, inexpensive, and often provided free during physiotherapy sessions, allowing exercises to be completed almost anywhere (Verywell Fit, 2024). However, their limitations become apparent as users advance; resistance bands cannot support complex movements or higher loads needed in later stages of rehab (Meyer, 2025).

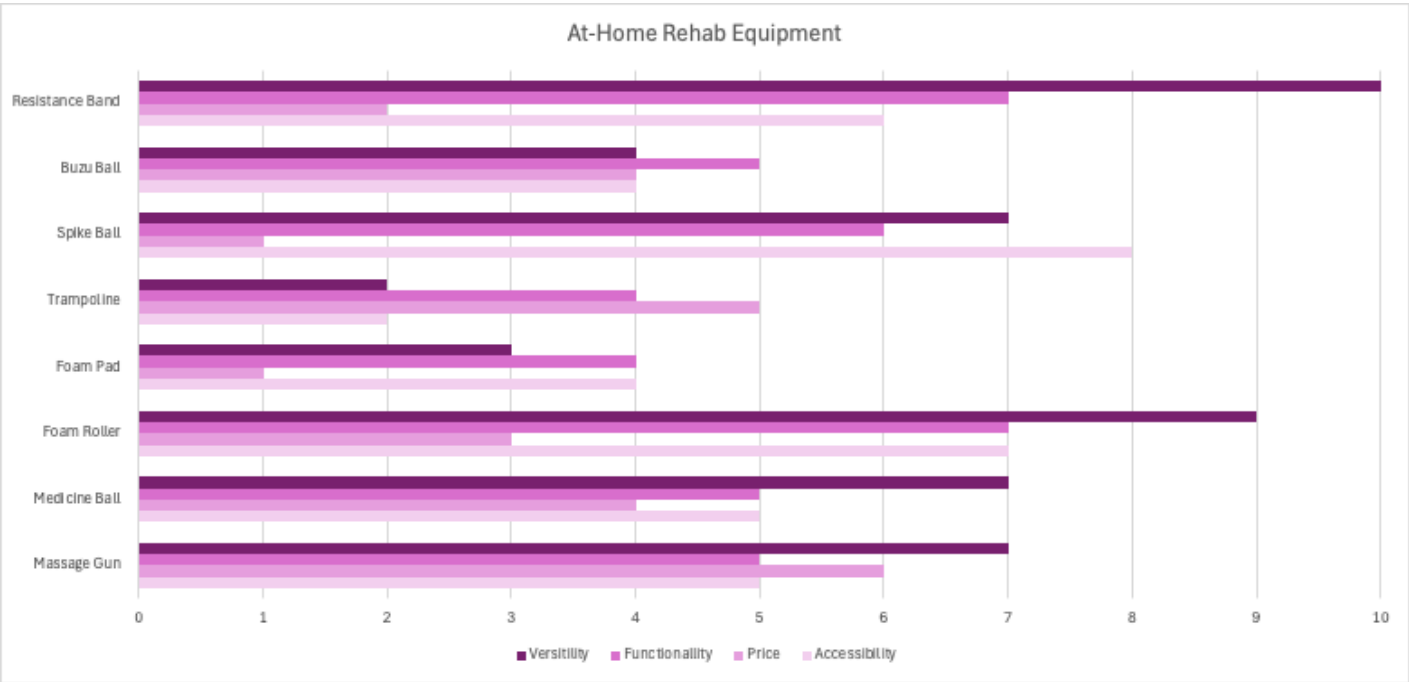


Figure 4: Comparison of At-Home Rehab Equipment

Alternative Rehab Options – Physiotherapy App Programs

Digital solutions such as physiotherapy apps provide structured, personalised rehab plans (Good Hands Physical Therapy, 2025). Apps typically include video demonstrations, guided walkthroughs, reminders, progress tracking, and direct communication with physiotherapists (Good Hands Physical Therapy, 2025). The main benefits are accessibility and accountability. Apps enable users to complete exercises correctly at home and maintain consistency through reminders and progress check-ins (Brown, 2025). They also allow practitioners to monitor rehabilitation remotely. However, their effectiveness relies heavily on user engagement, and they cannot provide physical feedback, meaning incorrect movements may go unnoticed (Good Hands Physical Therapy, 2025).

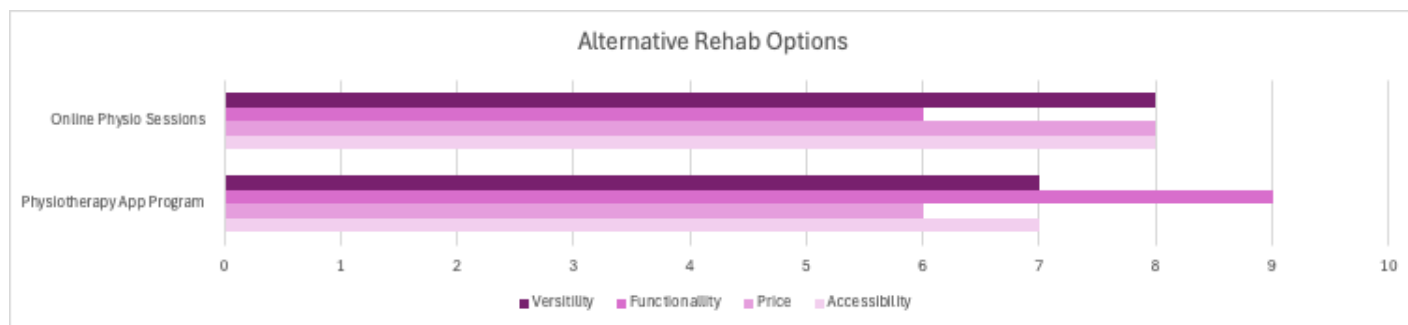


Figure 5: Comparison of Alternative Rehab Options

Market Gaps and Opportunities

The benchmarking highlights trade-offs between product categories. Professional equipment offers strong functionality but is expensive and inaccessible (Merlin Health, 2023). At-home tools are affordable and portable but limited in versatility (Verywell Fit, 2024). App-based programs support accountability but depend on motivation and provide no physical feedback (Good Hands Physical Therapy, 2025).

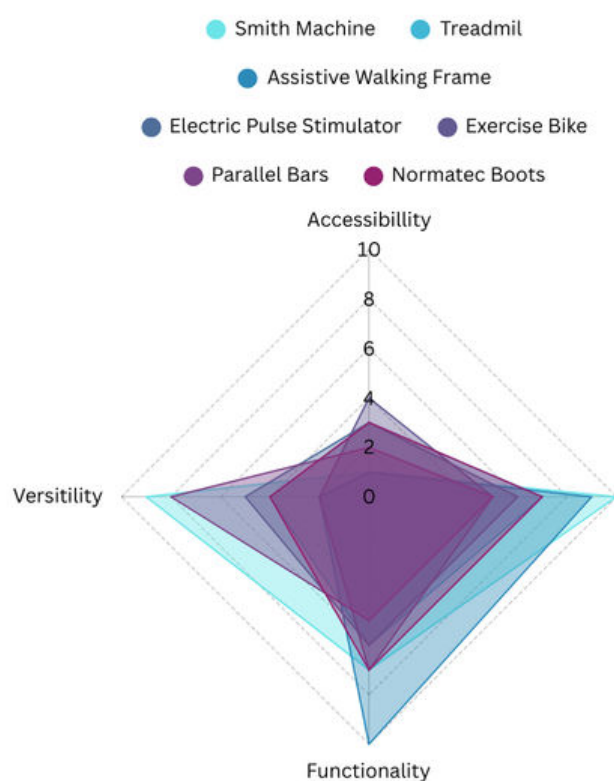


Figure 6: Spider Graph Comparison of Professional Physio Equipment

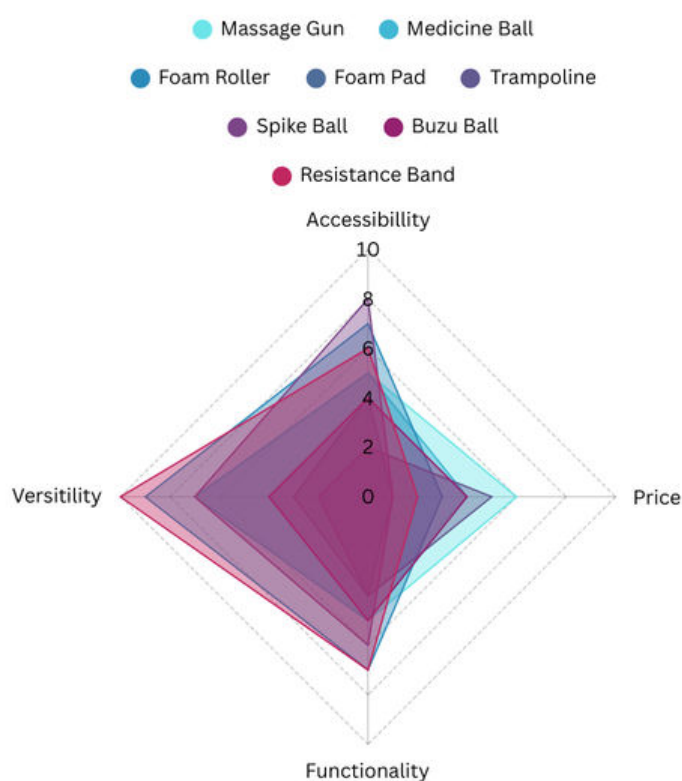


Figure 7: Spider Graph Comparison of At-Home Physio Equipment

From these comparisons, three key gaps emerged:

Affordable Products with Guided, Adaptive Feedback

Current products either provide functionality at a high cost or affordability without feedback. A low-cost product offering real-time guidance would help ensure exercises are performed correctly and progress safely (Polish, 2023).

Solutions for Both Beginners and Advanced Users

At-home equipment often plateaus after early-stage rehab, while professional tools can be too advanced for beginners. A scalable product that adapts to different levels of difficulty would support users across the entire recovery journey (Meyer, 2025).

Portable and Space-Efficient Solutions

Professional equipment is large and immobile, while even some mid-range tools lack portability. Compact, easy-to-store solutions would enable consistent rehab at home, in small spaces, or while travelling (Nichols, 2024).

These gaps highlight opportunities for innovation. The ideal solution would combine professional-level versatility with the affordability and accessibility of at-home tools, integrating adaptive feedback and scalable functionality to remain relevant throughout all stages of rehabilitation (Capritto, 2021). Portability would further enhance usability, ensuring rehabilitation can occur in a wider range of environments (Brown, 2025).

Benchmarking reveals that no existing product fully balances affordability, accessibility, functionality, and adaptability. Professional equipment excels in function but lacks accessibility (Merlin Health, 2023). At-home tools are affordable and versatile but limited in progression (Verywell Fit, 2024). App-based programs support accountability but require high user engagement and lack physical feedback (Good Hands Physical Therapy, 2025).

The key market gaps are:

- Affordable devices with adaptive feedback (Polish, 2023)
- Products suitable for beginners and advanced users (Meyer, 2025)
- Portable, space-efficient designs (Nichols, 2024)

These insights point to an opportunity to develop an affordable, portable, and adaptive rehabilitation product that evolves with the user and supports recovery across all stages, a solution not currently offered in the market (Capritto, 2021).

This section outlines the research and data collection methods used to gather primary insights into the sports rehabilitation process. Primary data is critical as it draws directly from individuals with first-hand experience, providing not only reliability but also richer insights (Creswell & Creswell, 2018).

A mixed-method approach was chosen, incorporating both qualitative and quantitative data. This ensured that the research went beyond statistics, capturing measurable patterns alongside personal experiences. By combining player perspectives with the expertise of a physiotherapist, the research offers a well-rounded understanding of rehabilitation and the factors that shape recovery (Creswell & Plano Clark, 2017).

Methodology

Two complementary research methods were used: surveys and an interview. The survey combined quantitative and qualitative questions. Closed questions, such as injury type, severity, and access to physiotherapy, provided structured data that could be categorised and compared across participants. Open-ended questions, such as what barriers players faced or what methods helped most, enabled participants to reflect on their own experiences. This ensured a balance between measurable results and deeper personal perspectives (Fowler, 2014).

The interview was fully qualitative, using open-ended questions to encourage detailed and reflective responses from a professional physiotherapist. Its flexible format allowed questions to be adapted during the discussion, producing rich insights into injury patterns, effective rehabilitation approaches, barriers, and opportunities to improve accessibility (Kvale & Brinkmann, 2015).

Together, these methods captured both user perspectives (players' experiences) and expert perspectives (professional practice), strengthening the overall analysis.

Tools

Two tools were used to implement these methods. The survey was distributed via Google Forms to players from the Kenmore Bears AFL team, generating 15 responses. Questions were designed to capture both quantitative data (e.g., injury severity, access to physiotherapy) and qualitative reflections (e.g., barriers faced, confidence in recovery). Consent was embedded into the process, with survey submission acting as agreement to participate, supported by an attached information form explaining the research purpose.

The interview was conducted via Microsoft Teams with physiotherapist Tom Sommerville. With consent, the session was recorded and transcribed for detailed analysis. A signed consent form and accompanying information sheet were provided to ensure ethical participation. While the survey offered a broad overview of player experiences, the interview delivered expert depth and context.

Justification

Surveys and interviews were chosen to capture insights from two equally important perspectives: athletes undergoing rehabilitation and a professional delivering it.

The survey was effective in identifying patterns across players. Quantitative responses highlighted trends in injury types, recovery timelines, and access to resources, while open-ended answers revealed personal reflections on motivation, challenges, and effective practices (Fowler, 2014). Collecting data from multiple participants created a broader understanding of shared experiences in a team environment.

The interview provided the professional context. Open-ended prompts encouraged detailed insights into rehabilitation practices, systemic challenges, and common player behaviours. These reflections added depth to the research, highlighting issues not always visible in player responses alone (Kvale & Brinkmann, 2015). By combining breadth from the survey with depth from the interview, the research ensured that both practical realities and professional expertise were captured.

Summary

In summary, this section detailed the methodologies and tools used to explore the rehabilitation process. A mixed-method approach combined surveys and an interview to gather both quantitative and qualitative insights. The survey, distributed to the Kenmore Bears AFL team, produced 15 responses that revealed common injury types, barriers to recovery, and confidence in outcomes. The interview with physiotherapist Tom Sommerville, conducted via Microsoft Teams, provided expert insight into rehabilitation practices and systemic challenges.

By bringing together user and expert perspectives, the research produced a balanced understanding of the rehabilitation journey. Key findings included barriers such as cost, access to equipment, and maintaining motivation, alongside the crucial role of professional guidance. These insights point to clear design opportunities for accessible, affordable, and user-friendly rehabilitation solutions that can support athletes in both physiotherapy sessions and independent recovery.

The research combined survey data and an in-depth interview to understand experiences of sports injury rehabilitation. Using both quantitative and qualitative methods provided a balanced perspective: numerical data identified common trends, while descriptive accounts offered insight into personal challenges and enablers of recovery.

Survey

The survey incorporated both quantitative and qualitative responses, requiring a two-pronged approach. Quantitative data was analysed through pie charts and bar graphs generated in Google Forms, which clearly displayed response patterns. Qualitative responses were thematically organised in Miro, where commonalities were grouped and positive or negative sentiments visually coded. This enabled a detailed understanding of participant experiences beyond numbers alone.

Several key trends emerged from the survey results. Firstly in question 4 (Appendix 2), all participants reported access to professional physiotherapy during their recovery, reflecting its central role in rehabilitation. However, 38.5% indicated that their access was irregular, revealing weaknesses in continuity of care. Inconsistent physiotherapy can delay recovery, particularly in structured programs requiring progressive monitoring.

The most common rehabilitation methods were physiotherapy exercises and gym-based strength and conditioning programs identified in question 5 (Appendix 3). While effective, both approaches are costly and resource-dependent, highlighting the influence of financial accessibility. Barriers were further emphasised when 38.5% of respondents identified cost as their primary challenge, while another 38.5% highlighted difficulty maintaining motivation. These factors appear linked: when cost reduces participation in physiotherapy, motivation may also decline, increasing the likelihood of premature return to sport.

This was supported by responses to question 9 (Appendix 5) about recovery confidence, where 69.2% described themselves as “mostly recovered with occasional issues.” Such outcomes suggest that barriers like cost and motivation contribute to incomplete recovery and ongoing problems.

The qualitative responses reinforced these findings. When asked what aspects of rehabilitation were most helpful in question 6 (Appendix 6), participants most often cited physiotherapist support, followed by consistency in program completion. This underlines the importance of professional guidance and regular adherence to structured routines. When asked in question 8 (Appendix 7) whether an affordable and easy-to-use rehabilitation product or service would have improved their experience, most agreed. Only two participants said it would not help, while the majority argued that affordability and usability would reduce barriers and improve consistency.

Participants also reflected on what influenced their recovery confidence in question 10 (Appendix 8). Commitment was the most common factor, followed by access to gyms. These insights highlight the interaction between personal discipline and available resources in shaping outcomes. However, when asked in question 11 (Appendix 9), what would have made their rehabilitation more effective, the most frequent response was greater access to physiotherapy, suggesting that, despite personal commitment, professional expertise remains critical to achieving full recovery.

Interview

The in-depth interview with Tom, an AFL physiotherapist, provided additional context and alignment with survey findings. Thematic analysis followed Braun and Clarke's (2006) six-phase approach, which included coding, theme identification, and narrative construction. This method was chosen for its flexibility and ability to capture patterns of meaning in detail.

Tom described the multifaceted role of physiotherapists, extending beyond clinic-based sessions to include match-day support, post-game triage, and structured rehabilitation planning. Rehabilitation was explained as a phased process: beginning with pain and swelling management, progressing through functional recovery and load tolerance, and culminating in sport-specific preparation. This staged approach reflects the structured progression needed for effective outcomes.

He also highlighted the value of accessible tools such as bodyweight exercises and resistance bands, which are affordable and easy to use, improving compliance in early stages. However, he stressed that advanced recovery and injury prevention often require gym-based equipment. Barriers echoed those reported in the survey: players' eagerness to return early, financial constraints limiting ongoing physiotherapy, and the tendency to stop once they felt "good enough." As Tom observed, many athletes weigh the cost of completing rehabilitation against the perceived benefit of achieving the final 10–20% of recovery.

To address these issues, Tom stressed the importance of measurable outcomes and goal-setting. Athletes respond positively to clear benchmarks, such as performance metrics and strength testing, which help maintain motivation and reduce drop-off. He also emphasised the need for awareness of funding options, including team care arrangements and bulk-billing, which could ease financial barriers and increase access to physiotherapy.

Together, the survey and interview highlight several consistent findings. Rehabilitation depends heavily on physiotherapy and structured routines, yet significant barriers, particularly financial costs and maintaining motivation, limit continuity and completion. While commitment and access to gyms support recovery, participants consistently stressed the importance of professional guidance. Both datasets pointed to the need for affordable, accessible rehabilitation solutions and greater awareness of funding models. Ultimately, consistent access to physiotherapy, supported by measurable progress markers and complementary tools, was identified as key to achieving complete and sustainable recovery.

The primary research conducted through surveys and an in-depth interview strongly aligns with the findings from the literature and benchmarking analysis, reinforcing the challenges and opportunities identified in sports rehabilitation. Both data sets highlight the structured and progressive nature of rehabilitation as outlined in the literature, with participants and the physiotherapist consistently emphasising the importance of staged recovery, adherence to programs, and professional guidance. This supports the claim made in the background research that rehabilitation is not merely rest, but a complex process requiring commitment, progression, and monitoring.

The survey responses demonstrate that, while access to physiotherapy remains central to recovery, practical barriers such as cost and irregular availability directly influence adherence and outcomes. These findings corroborate the literature highlighting financial and geographical constraints as critical impediments to equitable rehabilitation access. In particular, the reported reliance on gyms and structured programs reflects the literature's point that many rehabilitation methods require specialised equipment, which is often unavailable to athletes outside clinical settings. Furthermore, the qualitative feedback emphasising consistency, professional support, and motivation reinforces existing research advocating for structured, user-centred approaches to rehabilitation that encourage adherence and progression.

The benchmarking of current products also finds clear support in the primary data. Survey participants' interest in affordable and easy-to-use rehabilitation solutions reflects the gaps identified between professional physiotherapy equipment, home-based tools, and app-based programs. Similar to the literature, the research confirms that while tools like resistance bands and bodyweight exercises are accessible and low-cost, they may not fully address the demands of advanced stages of recovery or provide feedback, underlining the need for adaptive and user-friendly solutions.

The physiotherapist interview further emphasised this point, noting that measurable outcomes and guided feedback are key to maintaining motivation and ensuring safe progression, echoing the literature's identification of feedback and adaptability as critical design considerations.

Overall, the primary research both validates and expands on the literature by providing first-hand insight into how financial, motivational, and resource-based barriers affect rehabilitation. It reinforces the necessity of solutions that are affordable, accessible, portable, and adaptable, highlighting the ongoing need for innovation in sports rehabilitation design. By connecting lived experience with established research, the findings provide strong evidence that user-centred, low-cost, and versatile rehabilitation products could meaningfully bridge the gap between professional physiotherapy and self-managed recovery, supporting better outcomes for a broader range of athletes.

The combined findings from the primary and secondary research provide clear guidance for design opportunities in sports rehabilitation. Both datasets highlight that while rehabilitation is a structured, essential process, significant barriers, financial, geographical, and motivational, limit access and adherence. These insights have direct implications for the design of rehabilitation products or systems, particularly in addressing affordability, accessibility, usability, and adaptability.

1. Affordable, Low-Cost Solutions

A key finding from both the survey and literature is that cost is a primary barrier to completing rehabilitation. Participants frequently cited financial constraints as a reason for limited physiotherapy access or premature cessation of recovery programs, a point strongly supported by the literature. This presents an opportunity to design rehabilitation tools that are low-cost while maintaining functional efficacy. Potential challenges include ensuring that affordability does not compromise quality, durability, or the ability to accommodate multiple stages of rehabilitation. However, the opportunity lies in creating scalable solutions, such as modular equipment or multifunctional tools, that deliver professional-level benefits at a fraction of the cost, allowing athletes to access structured rehab independently.

2. User-Centred, Intuitive Interfaces

Primary data emphasised the importance of adherence and motivation in achieving successful rehabilitation outcomes. Survey participants and the physiotherapist interview consistently highlighted the value of structured guidance, measurable goals, and feedback. This supports literature advocating user-centred design to encourage engagement. Design opportunities include creating tools with built-in guidance, clear progression markers, or interactive features that adapt exercises to user capability. Challenges may involve balancing simplicity with functionality, ensuring the product remains intuitive while supporting complex, stage-specific rehab exercises. Successfully addressing this can increase consistency, reduce injury risk, and empower users to self-manage recovery.

3. Portability and Accessibility

Both research streams identified the limitations imposed by geography and facility access. Athletes in rural or remote areas face challenges accessing gyms, physiotherapy clinics, or specialised equipment. The survey reflected a desire for portable, home-based rehabilitation options. Design implications therefore include the creation of compact, lightweight, and transportable devices suitable for various environments. Challenges include maintaining stability, resistance, or functionality in a portable form factor. The opportunity, however, is significant: portable solutions would enable consistent rehabilitation regardless of location, promoting equitable access and increasing long-term adherence.

4. Adaptive and Progressive Functionality

Another critical insight is the need for rehabilitation tools that support progression across all stages of recovery. Primary research showed that while basic equipment like resistance bands or bodyweight exercises are accessible, they may not meet the demands of advanced rehab. Literature similarly identifies the importance of scalable and adaptive solutions. Design opportunities include adjustable resistance, modular add-ons, or digital integration to track progress and guide users through increasingly challenging exercises. The challenge lies in ensuring adaptability without making the product overly complex or costly. Achieving this could bridge the gap between beginner and advanced users, providing a single, evolving solution throughout the recovery journey.

Conclusion

This research demonstrates that sports rehabilitation is a complex, structured process that extends far beyond simple rest, requiring consistent commitment, professional guidance, and access to appropriate resources. Both primary and secondary data highlight the critical role of physiotherapy, gym-based programs, and structured routines in achieving full recovery. However, significant barriers, including financial constraints, geographical limitations, lack of equipment, and challenges maintaining motivation, consistently limit accessibility and adherence, contributing to incomplete rehabilitation and increased risk of reinjury.

Benchmarking and user insights reveal clear gaps in the current market: existing solutions often force a trade-off between functionality, accessibility, and affordability. While professional equipment offers advanced functionality, it is largely inaccessible; home-based tools are affordable and portable but limited in versatility; and app-based programs support accountability but cannot provide physical feedback. Both survey participants and the physiotherapist emphasised the need for affordable, accessible, and adaptive solutions that provide guidance, measurable progress, and scalability across all stages of recovery.

The findings underscore the opportunity for user-centred design to bridge these gaps. Designing low-cost, portable, and intuitive rehabilitation products that adapt to individual needs can empower athletes to manage their recovery effectively, regardless of location or financial means. By addressing the intersection of accessibility, usability, and progression, such innovations have the potential to improve recovery outcomes, reduce inequality in rehabilitation access, and support sustainable, long-term athlete health.

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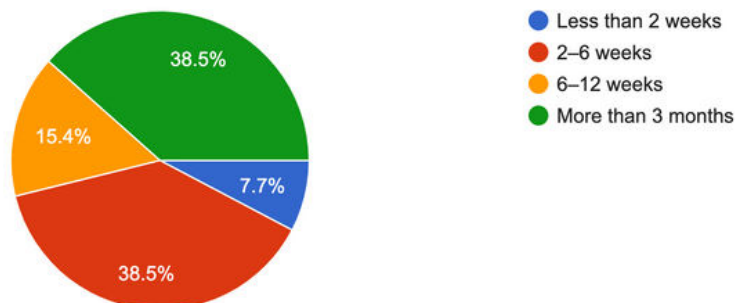
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Appendix

3. How severe was the injury in terms of recovery time?

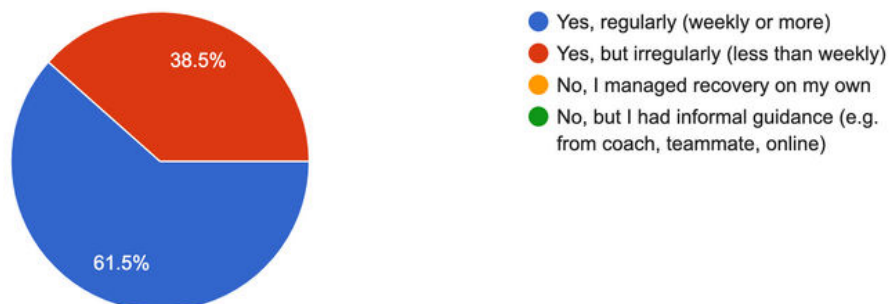
13 responses



Appendix 1: Survey Question 3 - Severity of Injury

4. Did you have access to professional physiotherapy during your recovery?

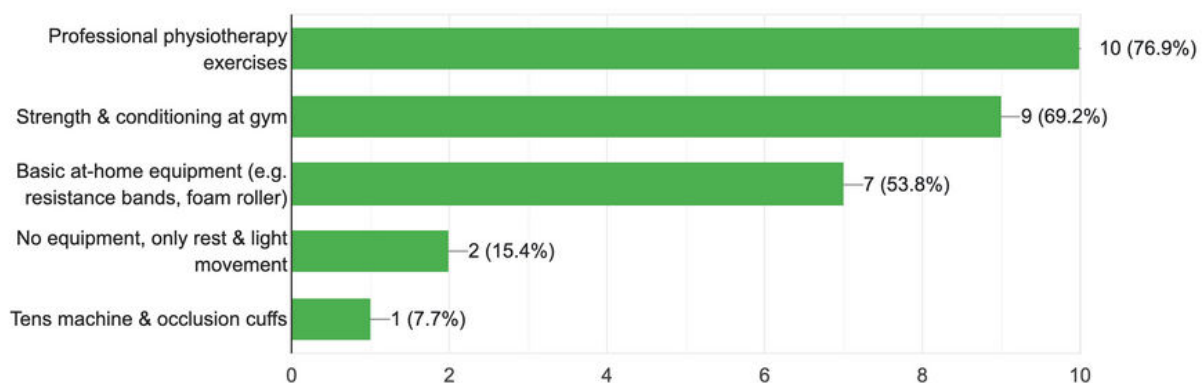
13 responses



Appendix 1: Survey Question 4 - Access to Professional Physiotherapy

5. What rehabilitation methods or equipment did you mainly rely on? (Select all that apply)

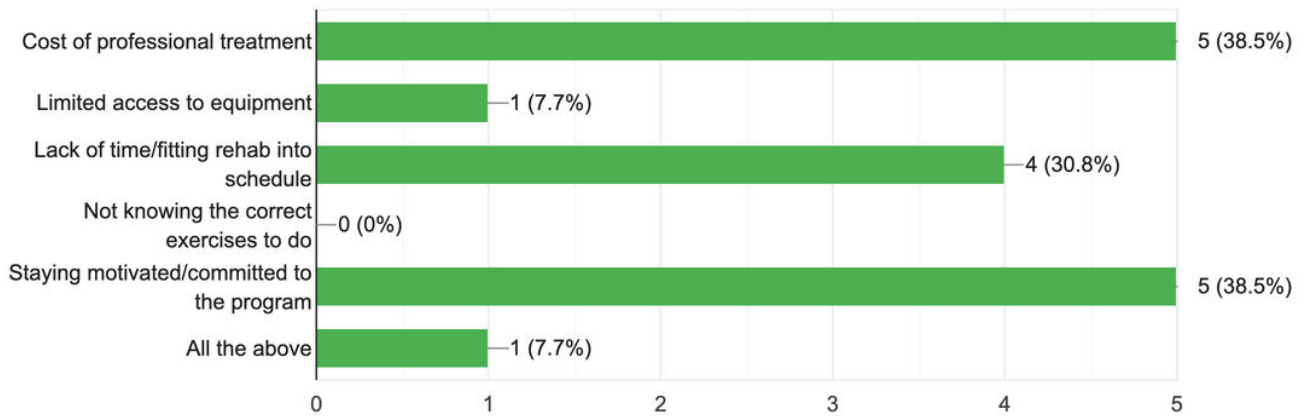
13 responses



Appendix 3: Survey Question 5 - Rehabilitation Methods or Equipment Relied on

7. What was the biggest barrier or challenge you faced during rehab?

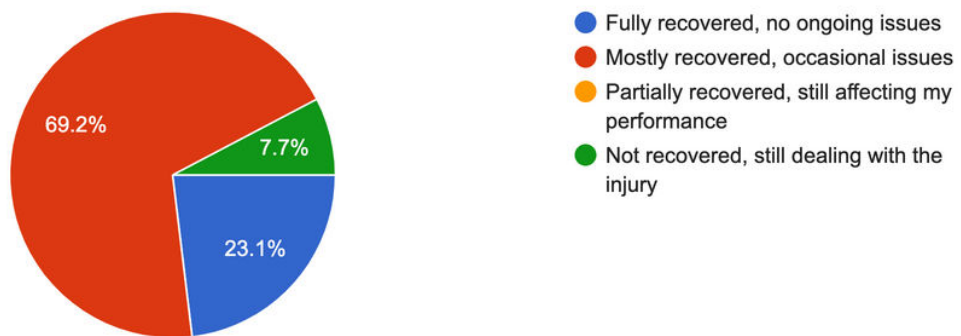
13 responses



Appendix 4: Survey Question 7 - Barriers or Challenges of Rehab

9. How confident are you that you fully recovered from your injury?

13 responses



Appendix 5: Survey Question 9 - Confidence in Injury Recovery

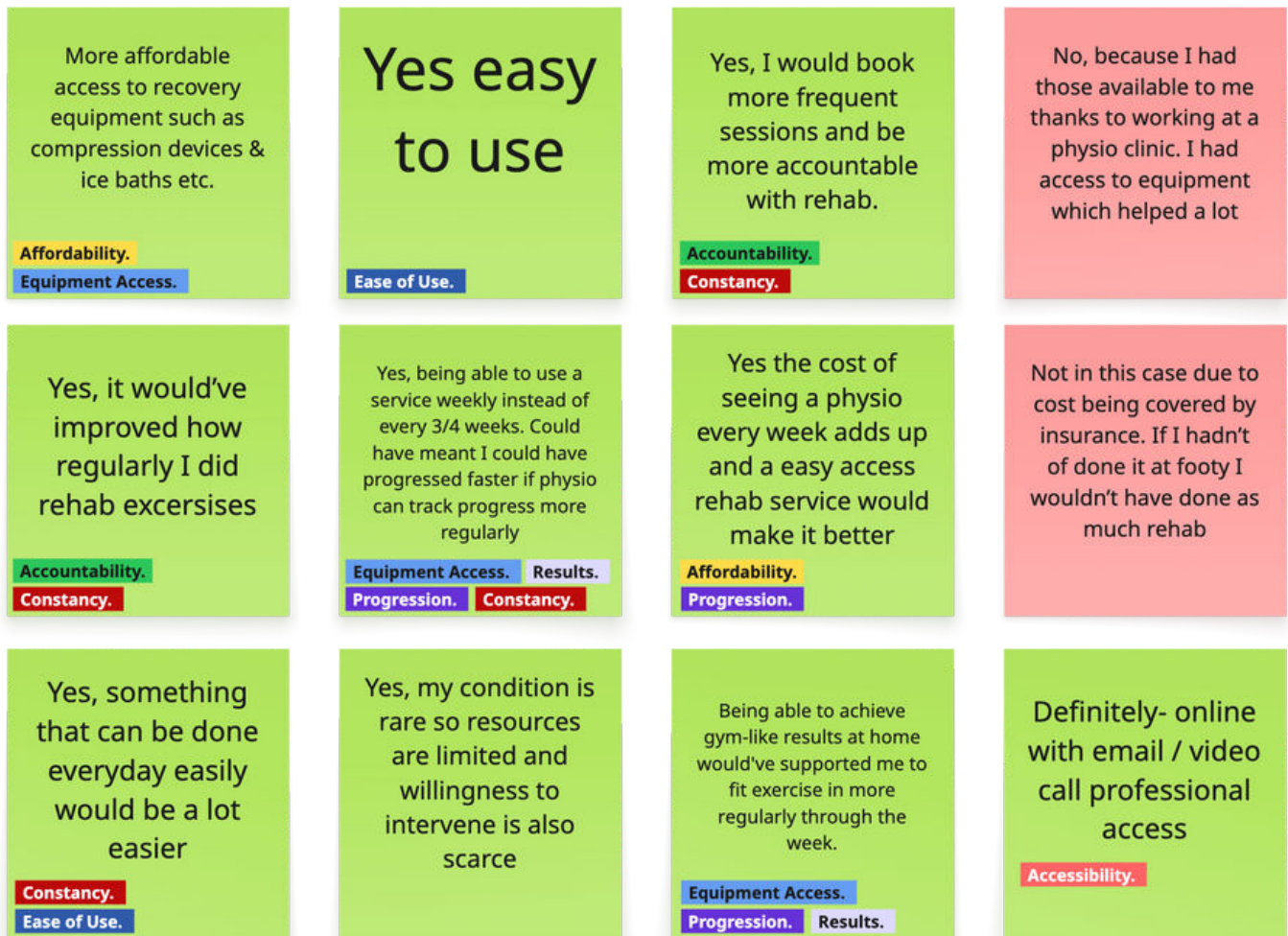
6 - What aspects of your rehab helped the most in getting back to playing?



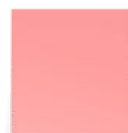
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Appendix 6: Survey Question 6 - Aspects of Rehab that Assisted with Return to Sport

8 - During your recovery, do you think an affordable and easy-to-use rehab product or service would have improved your experience? If so, in what way



Yes / Positive Response



No / Negative Response

Affordability.
 Accountability.
 Equipment Access.
 Progression.
 Constancy.
 Ease of Use.
 Accessibility.
 Results.

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Appendix 7: Survey Question 8 - Affordable, Easy to Use Product Improvement of Rehab

10 - Based on your previous answer (Question 10 - Figure X), why would you say you are at this level of recovery, and what has been the biggest influent on it?



Appendix 8: Survey Question 10 - Influence on Recovery Level

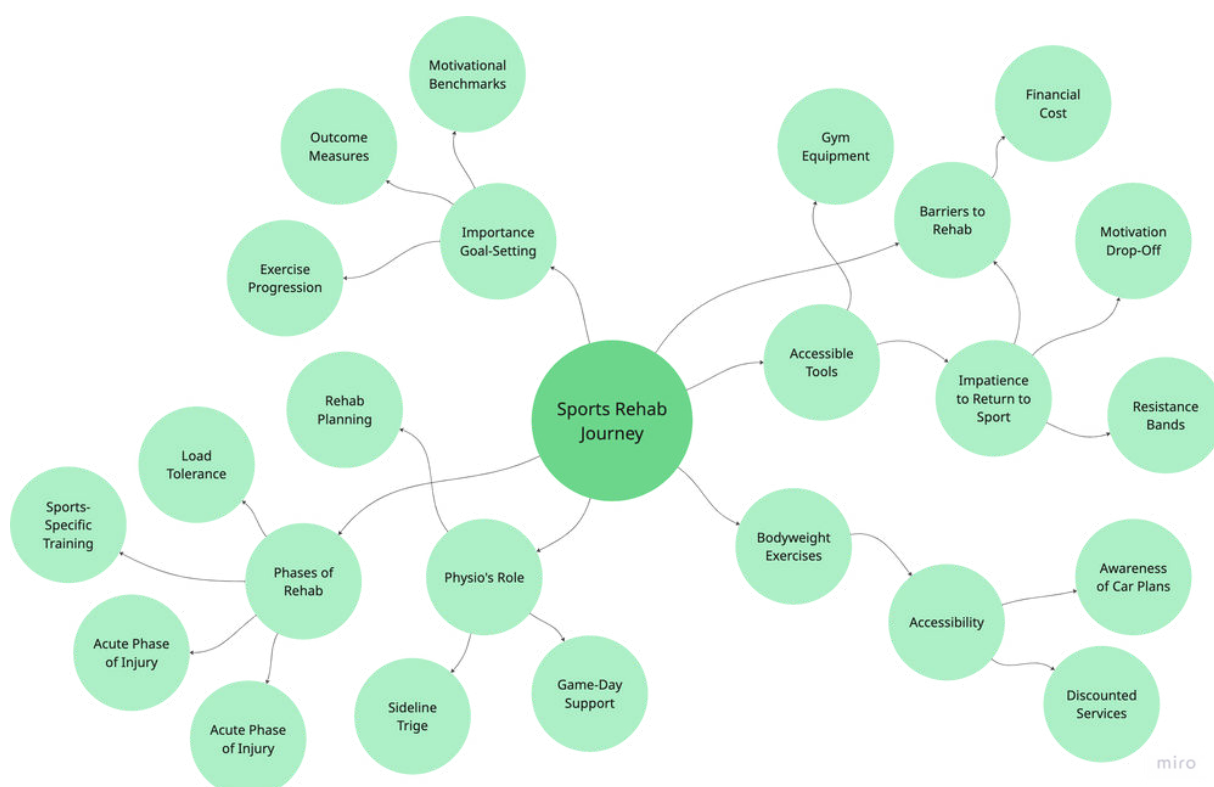
11 - Looking back, what's one thing you wish had been available to make your rehab more effective or accessible?



Appendix 9: Survey Question 11 - What would of made Rehab more Effective or Accessible

Theme	Key Points	Example Quotes
Physio's Role	Sideline triage, rehab plans	"During the game, I assess and triage any players that get hurt."
Phases of Rehab	Acute → function → load → sport	"Pain is typically our first protocol... then function, then load."
Accessible Tools	Bodyweight, resistance bands, later gym	"Everyone can benefit from bodyweight exercises... most accessible."
Barriers	Finance, impatience, drop-off	"Do I want to spend \$500 for the last 10–20%?"
Goal-Setting	Progressions, outcome measures	"Athletes like numbers... clear goals reduce drop-off."
Accessibility	Awareness of care plans, funding	"Patients can get a team care arrangement plan..."

Appendix 10: Table Matrix of Interview



Appendix 11: Mind Map Analysis of Interview

Category	Code	References (Count)
Physio Role & Process	Match-day support (strapping, warm-up management, triage)	4
	Post-game triage & referral (deciding on immediate vs further)	3
	Club-based informal rehab sessions	2
	Clinic-based assessment and rehab	3
Rehab Journey & Phases	Acute injury management (pain, swelling, inflammation)	5
	Functional restoration (regain movement, tolerate load)	3
	Exercise progression & sport-specific rehab	5
	Long-term injury management & spaced appointments	2
Exercises & Equipment	Bodyweight exercises (accessibility, compliance)	3
	Resistance bands	2
	Gym-based equipment for late-stage rehab	2
	Progression of exercises as critical for recovery	3
Barriers & Challenges	Player expectations (return to sport too quickly)	3
	Financial cost of physio (barrier to completion)	4
	Drop-off after pain subsides (~80% recovery threshold)	2
Accessibility & Support	Need for clear outcome measures & goals	3
	Athletes motivated by measurable progress (numbers, strength)	2
	Limited awareness of funding support (e.g., care plans,	2
Athlete Psychology & Beliefs	Belief pain = recovery (misconception)	2
	Motivation to return quickly (impatience)	3
	Compliance aided by simplicity & accessibility (minimal equipment)	2

Harrison:

Q1:

So yeah, the first question is just, yeah, can you describe your background, your experience with athletes, I guess, particularly more to do with AFL and then the role you typically play within their rehab journey?

Tom:

Yep, yeah, definitely. So I've been in physio for four years now.

I've worked with prior tooming equ qualified physio, worked with supporting teams as a sports trainer. And I was particularly like Greg V Union, so not I felt specific, I had a bit of a sporting back coming into VM. I worked with KI for the past three years, I you know. My role involved in KI so in terms, I'll do two days worth of it all down at the club itself involving with the Wire Club group, but also sort of players.

On Saturdays, other games, although I prov to the commencement of the game, commensity strapping that they do, any warm-up management, that some of the players they need to end working through any needballs to prep any pre-existing injuries in the boys ready. During the game, I'm there to kind of assess in triage any players that do become hurt. Probably be in the main role, and then secondary deal with any kniggles and or any complications in the actual games, not as your cramping or minus strength and strapping, et cetera.

So that's my role for Saturday. After the game, if there's any players that are injured, ideally, I triage them, so whether they need immediate medical attention at the hospital, or whether they need any investigations. If they need further investigations or if I think it's an injury that will last, you know impact their season or continue, I'll either go down to options.

So the first option being, if it's a bad enough injury, seeing them in clinic for a half an hour assessment, the second option would be an at the club itself, I'm going down for an hour and a half every Tuesday, and that's more of a more of an informal session, but any boys that have any nickels or might injuries can come through, go through a rehab plan and any handsome matchment that they might need.

Harrison:

Yeah, cool.

Q2:

I guess in terms of after that initial consult, what would a typical rehab journey look like from your perspective?

Tom:

Yeah, definitely. If we're talking kind of sports specific, usually the players are in a fair amount of pain first, right?

So it's an acute injury. I've seen them. They've done the injury on Saturday and I've seen them on Monday, they're still typically a lot of pain.

So pain is typically our first protocol while I' settling down pain. So that can look like working through hands on treatment, working through swelling management, advicing what to do, what not to do. We typically know that pain will last or that that acute phase will last up to two weeks for most injuries.

So where we have a really big pain response, we do have local inflammation and typically, that will last two weeks. So within that two week time sessions can vary, but we'll have an initial consult. Typically, I'll see them again the following week, depending on kind of pain levels as well.

If it is a bad enough injury, I can see them towards the end of the week during an acute phase. If we're talking our longer term injuries, we first get our function back. So improve pain, get our function to the point where we can tolerate some load.

After we're tolerating load, pain is to see improvements, that's where we, while the tend to look at, you know, every fortnight or every three weeks, we go for an exercise review. Those sessions are more there for exercise progressions and then going to sport specific progressions as well. So initially, if the injury is bad enough, I'll see the patient a couple of times within a couple of weeks, and then down the track, once they've got more function, we can start to longer term injuries, we can start to push out appointments for, once can improves, we work on exercise progressions.

Harrison:

Yeah, okay, cool.

Harrison:

Yeah, okay, cool.

Q3:

I guess in terms of a bit more like, regardless of the injury that's caused, do you reckon there would be any exercises, equipment, or approaches that I guess consistently work well across the whole process of rehab? Yeah, definitely.

Tom:

I think everyone Ken Bennett from body weight exercises and No one, like, you don't need any equipment. Everyone can have access to do something like that. Body weight and resistance bans are definitely one of my most prescribed exercises.

It's most accessible as well. We don't need additional equipment and the resistance bands will give them our in clinic as well. So I find in terms of compliance, that helps out a patients as well, if they don't need additional equipment.

So I wouldn't say body weight would be the most beneficial when we're talking late stage rehab, injury prevention, that's where I like to go into more of the gym equipment, having specific equipment that we keep used to reh, to ensure we get back to full capacity. Yeah, we work pretty.

Harrison:

Yeah, okay.

Q4:

I guess what challenges of barriers do you think players face the most in completing rehab? I guess whether that influences with their a player recovers quickly or struggles with it?

Tom:

Yeah.

I think the probably the expectation of when do they get back? I think a lot of players want to get back as quickly as they can. And I think once P settles down for most players, they think their injuries stops or is seized from them.

So I think during post-atacute phase, the barrier would be like the patient's beliefs, I believe, because they're just really keen to get back to footy, which I can understand. Don't blame them. That would be a big one.

Probably finance as well. Definitely understand that perspective. Physio is not cheap by any means.

It's essential, like some people just generally can't afford it. So that's a massive barrier, I think, for like most club sports, I believe that finance is is a big one.

Harrison:

Q5:

I was going to say, would you say that the, I guess the keenness and readiness or thought of readiness to get back to sport and then that financial barrier would impact, I guess how will you've actually recovered?

Tom:

Yeah, yeah, definitely.

I think once they get through that acute phase, like pain has improved. You know, they've spent a bit of money on physio already. If they don't see the, I guess the reward or the belief of being like, okay, you know, I'm at 80% capacity, that's good enough for me to go.

Do I want to spend an extra \$500, I at physio to get that last 10 or 20%. Like, do I need that? I think for most community sports, that's probably a big thing that a big belief that people have.

When we step up into your high lower athletes, they understand that, you know, any injury could mean seasons out or weeks out and for those higher level athletes, that's money for them and that's their life. But community level sports, I think, the financial barrier and also that belief, they definitely play a role with each other.

Harrison:

Yeah, okay interesting.

Q6:

I guess more looking at like accessibility, what would you think in terms of like features and aspects of rehab would be the most or I guess most important to someone who might not have full access to physio if you had to just pick a few things. like if they didn't have full access to gyms or come in and seeing a physio every week.

Tom:

Yep. I would say probably the progression of exercises, whether it's not necessarily, like you've got to do higher repetitions, it's working through the progression, what's next in terms of the exercise.

If a patient stays with the easy exercises, they're not going to progress no matter what sort of equipment they have.

So I think that progression is probably one of these essentials. I think.

Harrison:

Q7:

Yeah, yeah, cool. Okay. I guess just my last question.

Is there anything else about the rehab journey or athletes that you feel is important for designers to understand when aiming to improve accessibility?

So I guess more looking at product design and the whole system rather than the actual process. It's a bit of a broad question, but..

Tom:

No, no, no.

It's all right. Good question, good question.

Harrison:

I guess more coming from like a professional physio who knows a vast amount about the topic.

Tom:

Yeah, sorry, ask the question again, sorry.

Harrison:

So is there anything about the rehab journey or athletes that you feel is important to understand as a designer when aiming to improve accessibility and outcomes?

Tom:

Yep. I think the understanding of from the patient of why they're seeing physio and what the end goal is as well. I think probably too many people fall short because they they feel like they hit their end goal too early.

So I think having a clear set end goal with the outcome measure is that we can say, you, you're good to go once you get easy outcome measure from a patient's perspective, that will improve the overall journey, will probably lose it will be less drop off if they haven't hit their outcome measures, because that's something to strive for. I think athletes generally like numbers.

They like to see strength.

They like to see these outcome enders in comparison to en normalous. So I think having outcome measures from that perspective would be good to set gold for the patients.

Probably more access of what services are available as well.

So obviously, physio, most people know about that too. One service in terms of the financial perspective is if that's a big limiting factor, patients can get a care plan from their EP where they can have access to fire Allied health consults and I' pretty heavily discounted rate if they're a student, it can be bog built as well. So if a financial aspect is a big one, it's called a team care arrangement plan, more knowledge about that and just that service is available could definitely impact the outcome of patients.

Harrison:

Yeah, okay, cool. All right. That's all the questions I've got for you.

Thanks for your time today, Tom. I really appreciate all it.

Thanks, Tom.. Cheers.

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Appendix 14: Interview with Professional Physiotherapist