

The Handover Hangover: Sequential vs. Concurrent Return to Performance Models in Elite Sport

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Headline

Elite sport organisations invest more than ever in the quality of their practitioners. They recruit top-level specialist physiotherapists, performance coaches, sports scientists, and medical staff of genuine expertise. Yet the structure connecting those practitioners, in the majority of high-performance environments, remains the same it has always been: a sequence of disciplinary phases in which one specialist hands the athlete to the next when their portion of the work is done (Buchheit et al., 2023). The investment is in people. The architecture is a relay race. And as with any relay, the critical question is not just how fast each leg is run, it is also what happens at the exchange (King et al., 2024).

The more traditional, sequential rehabilitation model (Figure 1), which we characterise here as time-based and in silo's, is not the product of poor intentions. It reflects a historically reasonable response to professional specialisation: clinical responsibility is clearest when it is bounded. It's often a reflection of the way professionals have been trained. They've trained separately, so they think separately. Not to mention the comfort of staying within their own lane as a defense mechanism in a sub-optimal environment (Buchheit & King 2025). Physiotherapy owns the acute phase; S&C assumes loading when the athlete is cleared; coaching receives a conditionally fit player and works toward competitive reintegration. Each discipline does its work competently. But the architecture of sequential handover generates structural problems that are independent of individual practitioner quality.

The evidence bears this out. Poor communication and ambiguity between key stakeholders in return-to-play processes has been estimated to reduce player availability by as much as 6–7% (Ekstrand et al., 2019). Elite practitioners, when asked directly, are unambiguous. In a 2023 survey spanning professional football, rugby, and basketball, communication clarity was the single highest-rated KPI across all MDT domains, ahead of every clinical and technical measure on the list (Buchheit, Schuster & King, 2023). Surveys of elite football practitioners reveal that decision-making at phase transitions frequently lacks objective, shared criteria (Buchheit et al., 2023). Reinjury rates following premature return, a direct consequence of inadequate phase-transition management, approach 38% for hamstring injuries in the six months after clearance (Wangenstein et al., 2016). These are not outliers. They are structural features of a model that was never designed for the complex rehabilitation ecosystem it is now required to manage.

The question this paper asks is not whether individual practitioners are performing well. It is whether the system that organises them is fit for purpose.

Aim

The aim of this current opinion piece is to discuss the current practices when it comes to ownership and collaboration between practitioners during the return to performance process and highlight the integrated rehabilitation framework based on the author's experience.

Three Principles: Collegiality, Alignment, and Concurrent Engagement

The Integrated Rehabilitation Continuum is not primarily a clinical protocol. It is an organising philosophy built on three interdependent principles that, together, produce the conditions in which concurrent, disciplinarily-coherent rehabilitation becomes possible.

1. Collegiality

Collegiality, in this context, means more than professional courtesy. It means that practitioners from different disciplines hold each other's expertise as genuinely relevant to their own decision-making, not as a formality to be observed at transition meetings, but as a daily operational reality.

This quality does not emerge from professional goodwill alone. Collegiality requires trust and trust requires an environment in which practitioners feel safe enough to be genuinely open. King et al. (2024), in qualitative research with elite sport multi-disciplinary teams, found that practitioners consistently identified psychological safety as the foundational condition for collaborative behaviour. Without it, even practitioners who valued integration defaulted to protecting their professional domain. Edmonton's (1999) work on team psychological safety establishes the same principle; people share, challenge and integrate only when the cost of openness feels lower than it's benefit. In rehabilitation teams, where clinical authority, professional identity and job security are all implicated in daily interactions, that condition cannot be assumed. It must be deliberately built.

Research into high-performance sporting organisations consistently identifies professional culture as the primary enabler or barrier to multidisciplinary effectiveness. Stewart et al.

3. Concurrent Engagement

Concurrent Engagement is the structural principle, the architectural consequence of collegiality and alignment made operational. It is the mechanism through which integration moves from aspiration to architecture. All disciplines present and contributing from day one, adjusting their weight but never their presence.

The traditional model falls shortest here. Sequential handover assumes that staged responsibility produces cleaner accountability, in practice, it produces gaps. The athlete who moves from physiotherapy to S&C carries information that was never formally transferred. The coach who receives a cleared player has had no involvement in what cleared actually means for that individual's movement confidence, tactical readiness, or reinjury psychology. Each discipline performs its phase well. The architecture fails where the people did not.

Concurrent engagement resolves this not by dissolving professional boundaries, but by recontextualising them. The physiotherapist's clinical authority is not diminished by early S&C involvement, it is strengthened by real-time load response data from outside the clinic (King et al., 2024). The coach's tactical planning is not disrupted by early rehabilitation involvement, it is protected, because the athlete's perceptual engagement with the game is maintained continuously rather than reintroduced at the end.

And critically, none of this requires constant co-presence. The use of efficient athlete management systems, shared planning, training content, GPS and gym-based metrics as shared progression criteria across the MDT, as demonstrated in criteria-based return-to-performance frameworks in elite sport, enables joint decision-making across distance and schedule (Yung et al., 2022). The mechanism was never exclusively physical proximity, though co-location helps. It is shared information, shared accountability, and a structure that makes both the norm rather than the exception (Stewart et al., 2024).

The Integrated Rehabilitation Continuum

The Integrated Rehabilitation Continuum (Figure 2) is presented as a wedge model rather than a segmented block model. From the moment of injury through to full return to performance, all disciplines are engaged concurrently. Their proportional contribution shifts over time, but their presence, in some functional form, does not cease.

At injury onset, physiotherapy commands the largest share of the rehabilitation load: managing acute tissue response, initiating early neural and mechanical loading, and guiding the athlete through the pain-tissue healing-early loading cycle. S&C involvement begins immediately, not necessarily as conventional gym-based loading, but as physical capacity monitoring, injury-adjacent strength and metabolic training design, and the preservation of qualities unaffected by the injury. Coaching involvement also starts early: not to direct training, but to maintain the athlete's tactical familiarity, mental engagement, and sense of continued membership of the performance group, while working on individual development strategies. The language of this early phase, window of opportunity matters as much as the load. A coaching environment that frames rehabilitation around what the athlete is building, speed off the mark, tactical sharpness, upper body power, rather than what is temporarily unavailable- produces a fundamentally different psychological trajectory through the recovery process.

Elite environments understand that rehabilitation creates space as well as constraint. It is a window of opportunity

rarely afforded in competition, to deepen existing strengths and mitigate performance-limiters that a full training load leaves no room to address. And throughout, the best organisations never lose sight of something more fundamental; treating the athlete as a person first. What happens outside the sporting environment has a significant influence on rehabilitation and performance.

Medical specialists and allied health practitioners, sports physicians, psychologists, nutritionists, provide a continuous thread of oversight and governance throughout the continuum. Their contribution is not the bookend of acute management and return clearance; it is an ongoing safety and decision-support layer that adjusts in intensity as rehabilitation progresses.

As the athlete moves toward return to performance, the proportions shift gradually, though decisively. S&C and coaching assume the larger share as physical preparation and tactical reintegration dominate the agenda. Physiotherapy's direct load contribution decreases, but its monitoring role continues alongside the maintenance and evolution of key rehabilitation components. By the time full team integration is reached, the transition is not an event. It is the completion of a process in which all disciplines have been continuously involved and incrementally shifting their proportion of contribution. Ultimately, stepping forward as performance partners, ownership shared, no single discipline carrying the case alone.

The Way Best-In-Class Organisations Are Already Operating

The Integrated Rehabilitation Continuum is not entirely theoretical. Its principles are already evident, if not always explicitly named, in the operating models of the highest-functioning performance organisations in world sport.

Institutionally, the principles of the Integrated Rehabilitation Continuum are already embedded in the operating models of the world's leading sports medicine environments, those that have moved beyond siloed disciplinary practice toward genuinely concurrent, integrated athlete care across every phase of rehabilitation.

At the coalface of elite team sport, the same principles are visible in the medical and performance support structures of consistently high-performing AFL clubs and top-tier European football organisations- as witnessed by both authors when working in these environments. The clubs that sustain low injury burdens, high player availability, and rapid return-to-performance timelines across a season are rarely those with just the most advanced individual practitioners; they are those whose practitioners function as a genuinely integrated unit (Buchheit, Schuster & King, 2023). Physiotherapy, S&C, sports science, and coaching staff operate from shared information, aligned load targets, and continuous communication rather than sequential handover. The competitive advantage is structural, not merely clinical.

This is increasingly recognised in the leadership literature. Stewart et al. (2026) found that the highest-functioning MDTs in elite sport were defined not by the expertise of individual practitioners but by the degree to which disciplines were structurally integrated around shared goals, what their participants described simply as everyone pulling on the same rope (Stewart et al., 2026). When disciplines operate this way, the whole exceeds the sum of its parts: one plus one becomes three. The Integrated Rehabilitation Continuum simply makes explicit what they are already doing implicitly (Figure 3).

Integrated Rehabilitation Continuum

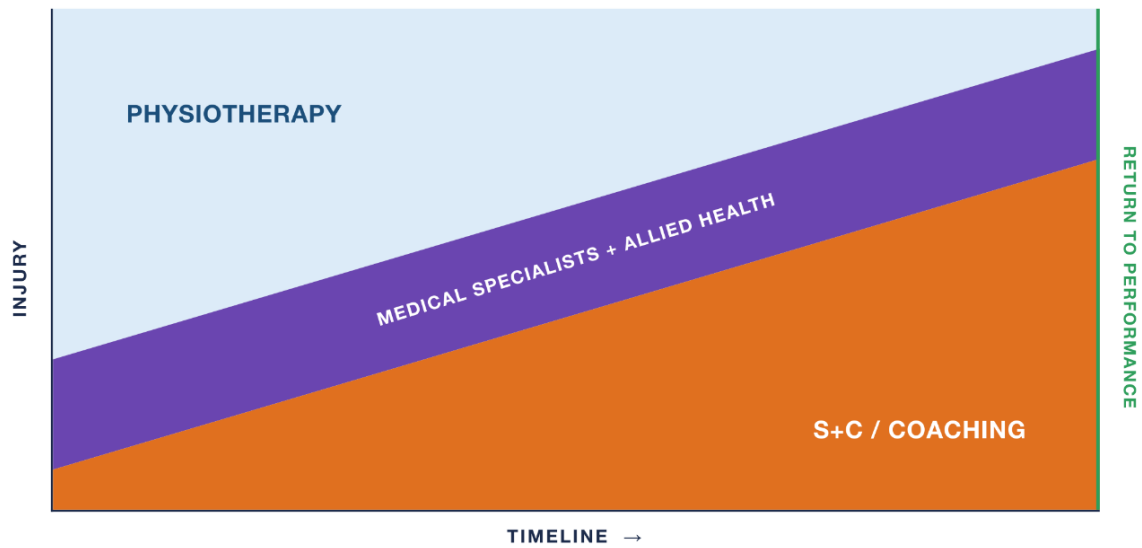


Fig. 2. Proposed Framework Shift; The Integrated Rehabilitation Continuum.

Integrated Rehabilitation Continuum Framework

All disciplines contributing, proportion shifting over time

	1 Foundation + Reload	2 Accumulation + Transition	3 Simulation	4 Resilience
Physiotherapy	<ul style="list-style-type: none"> Symptom modulation and loading of affected tissue Education, reassurance and movement confidence 	<ul style="list-style-type: none"> Progress tissue capacity and rehabilitation-specific qualities Monitor response and guide progression criteria 	<ul style="list-style-type: none"> Expose athlete to high-intensity and complex load Manage response and optimise performance 	<ul style="list-style-type: none"> Implement tertiary injury prevention strategies Continue application of key rehabilitation exercises
Performance Support + Coaching	<ul style="list-style-type: none"> Develop physical qualities of unaffected regions through cross-training Coaching of key individual development priorities 	<ul style="list-style-type: none"> Build sport-specific physical capacity and robustness Reintegrate technical and tactical performance demands 	<ul style="list-style-type: none"> Design sport-specific drills that replicate match demands Detailed integration into team training and managed game minutes 	<ul style="list-style-type: none"> Ensure return-to-performance continuity Continue to develop physical performance qualities and resilience
Medical Specialists + Allied Health	<ul style="list-style-type: none"> Imaging, specialist opinion & interventions Outcome measure review & clinical governance 	<ul style="list-style-type: none"> Review progression readiness and key outcome measures Ongoing specialist oversight and clinical governance 	<ul style="list-style-type: none"> Monitor tolerance to high-performance loads Confirm readiness for return to play 	<ul style="list-style-type: none"> Ongoing surveillance and well-being Long-term health and performance optimisation

TIME → RETURN TO PERFORMANCE

Fig. 3. Examples of case responsibilities. |: Contributing, ||: Leading. The Integrated Rehabilitation Continuum (Rehab phases adapted from Aspetar Way; Simpson et al., 2026).

Practical Implications for the MDT

For practitioners working within the Integrated Rehabilitation Continuum framework, several operational principles emerge from both the theoretical model and the evidence base reviewed above.

- **Early involvement is not scope overreach.** S&C and coaching presence from day one is not a challenge to physiotherapy's clinical authority, it is a resource. The skill lies in defining what early contribution looks like for each discipline at each phase, and communicating those contributions clearly within the team.
- **Criteria-based progression must replace time-based gating wherever clinically safe.** The Integrated Rehabilitation Continuum does not dissolve phase distinctions, it dissolves hard handovers. Progressions are milestone-anchored, but those milestones are negotiated collectively. As Ardern et al. (2016) established in their landmark consensus statement, return-to-sport decisions should be grounded in readiness criteria, not weeks post-injury, and those criteria should be applied by a multidisciplinary group.
- **Load communication requires a shared quantitative language.** Joint decision-making demands shared metrics. Shared AMS / Cloud-based systems, tissue-tolerance thresholds, functional strength tests, GPS-derived external load data, and validated psychological readiness scales such as the Injury-Psychological Readiness to Return to Sport scale (I-PRRS) provide a common currency through which all disciplines can assess and discuss progression (Glazer, 2009).
- **The coach is a rehabilitation stakeholder, not the recipient of a gift-wrapped athlete, ready to perform.** Early coaching involvement ensures that the tactical and perceptual demands of return to competition are planned for proactively, not encountered for the first time at reintegration. This is particularly important in cognitively demanding, decision-rich environments where physical readiness and perceptual readiness do not always align.
- **Athlete's have a window of opportunity** to address athlete's individual development plans, inclusive of technical, tactical and psychological key performance metrics.
- **Medical oversight operates as governance, not gate-keeping.** The medical specialist's role in the Integrated Rehabilitation Continuum is to provide ongoing clinical safety review across the continuum, not to sequentially release the athlete at fixed phase boundaries. This preserves medical authority while maintaining the structural continuity the Integrated Rehabilitation Continuum depends on.
- **Psychological readiness is a shared responsibility.** The Integrated Rehabilitation Continuum's concurrent model means that fear of reinjury, confidence, and self-efficacy, which develop across the rehabilitation timeline, are addressed continuously, not at the end. Evidence consistently shows that psychological readiness is a meaningful predictor of both return-to-sport success and reinjury risk, and it cannot be bolted on as a final-phase checklist item (Liu & Noh, 2025).

Challenges and Limitations

The Integrated Rehabilitation Continuum is a structural ideal. Three specific barriers should be acknowledged honestly.

Resource and logistical constraints are real. Full concurrent engagement across all disciplines is easier with co-location and shared scheduling, but neither is a strict requirement as well as key responsibility and leadership assigned for specific athlete cases. In community sport, semi-professional contexts, or set-

tings where practitioners are shared across multiple athletes simultaneously, this degree of integration is not always viable. A pragmatic version of the IRC, structured daily communication, shared documentation, and agreed-upon load metrics, captures much of the benefit at lower resource cost.

Professional culture is the most significant barrier, and the most under-acknowledged. Practitioners trained in deep disciplinary expertise are not automatically equipped for collaborative fluency, but the more pressing issue is often not capability, it is environment. In high-performance settings where roles are precarious, tenures often short, and individual contribution must be visible to be valued, the rational response is to protect one's domain rather than share it. Practitioners in these environments default to disciplinary silos not because they lack collegial intent, but because the culture around them has made openness feel like professional vulnerability. The inverse is equally true: organisations that build psychological safety, provide direct and constructive feedback, reward shared outcomes over individual credit, and provide stable conditions for practitioners to invest in relationships- rather than just results are the organisations at the forefront of their fields. These are the environments where the Integrated Rehabilitation Continuum emerges naturally. Integration is not merely a clinical philosophy, it is a leadership responsibility.

The evidence base for the Integrated Rehabilitation Continuum as a named framework is currently conceptual- though the authors have lived and witnessed top-level departments performing as part of the framework. While its constituent elements- shared decision-making, concurrent discipline engagement, criteria-based progression each have independent empirical support, prospective controlled studies specifically testing integrated versus sequential models on return-to-performance outcomes remain limited. This paper presents the Integrated Rehabilitation Continuum as a framework for practitioner discussion and deliberate implementation, not as a Level I evidence-based clinical guideline. Controlled prospective research under Integrated Rehabilitation Continuum conditions would substantially strengthen the argument.

Conclusion: From Handover to Continuum

The handover hangover resolves the moment you change the architecture rather than the people. Elite sport organisations already possess the practitioners they need, the physiotherapists, coaches, S&C staff, and medical specialists who, individually, are among the most qualified in the world. What they frequently lack is the structural model that allows those practitioners to function as a system rather than a sequence.

The Integrated Rehabilitation Continuum makes that structure explicit. It gives practitioners, team leaders, and organisations a named framework and a conceptual model against which to evaluate their current practice, and toward which to move deliberately. Its three principles; collegiality, alignment, and concurrent engagement, are not aspirational abstractions. They are operational commitments that change the daily texture of how practitioners communicate, how decisions are made, and how athletes experience the rehabilitation journey.

When asked how staff performance should ideally be evaluated, 85% of elite practitioners indicated that assessment should be more process-driven than outcome-driven, with 70–80% process weighting the most commonly preferred balance (Buchheit et al., 2023). This is practitioners, collectively, rejecting the logic that has historically governed their own evaluation: the scoreboard, the injury count, the return timeline. They understand, from inside the system, that outcomes are downstream of processes and that a system which only measures the former will never reliably improve the latter.

The Integrated Rehabilitation Continuum is an expression of the same logic applied to rehabilitation architecture. Build the correct process, with the correct structure, and the outcomes follow.

High-performance sport has long understood that the best teams are not simply collections of the best individuals- they are collections of individuals who have learned to function as a system. The same logic applies to the teams that rehabilitate athletes. When those practitioners function as a system; collegial, aligned and structurally integrated from day one, the handover becomes redundant. Not because roles have been dissolved, but because all key stakeholders have input throughout. Every discipline has been present, informed and part of the decision-making. The athlete who returns to full training does not transition into a new phase of care, they simply arrive at the destination that our process was always heading toward, together.

Practical Takeaways

- Rehabilitation should be organised as a concurrent continuum of disciplinary contributions. The shift required is not primarily clinical- it is structural and cultural.
- Collegiality, alignment, and concurrent engagement are the three operational principles that underpin the Integrated Rehabilitation Continuum. All three must be present; any one in isolation is insufficient.
- All disciplines- physiotherapy, S&C, coaching, and medical specialists, should be engaged from day one. Proportional contributions shift as recovery progresses; presence and input from all key stakeholders changes in proportion, while always maintaining a level of contribution throughout the process.
- Criteria-based decision-making, shared quantitative load metrics, and structured daily communication capture the majority of the Integrated Rehabilitation Continuum's benefit even in resource-constrained settings.
- The highest-performing sports medicine institutions and sporting organisations in the world are already operating by these principles, the Integrated Rehabilitation Continuum names and systematises what they do.
- Further prospective research measuring outcomes such as injury recurrence rates, return to performance timelines and the quality of performance upon return under the Integrated Rehabilitation Continuum conditions versus traditional sequential models is needed and would be a valuable contribution to this field.

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