A Decision-Driven Framework for Interdisciplinary Player Evaluation in Elite Football

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Headline

In elite football, technological advances have increased the availability of evaluation tools, while competitive demands have reduced the time available to apply them. More testing does not improve decision-making unless information is translated into operational action. This technical note presents a practice-derived governance framework that structures interdisciplinary evaluation and supports consistent applied decision-making in high-performance environments.

Aim of the paper

To present a practice-derived decision-driven evaluation governance framework for structuring player evaluation in elite football, addressing what to measure, when to measure, how to interpret results, and how to translate evaluation signals into coordinated operational actions.

Design

Technical note (practice-derived framework); no experimental data were collected.

Methods

Practice-derived framework informed by interdisciplinary evaluation workflows in elite football; no human participant data were collected.

Results

Framework outputs are presented in Figures 1–4 and Table 1, which provide a structured representation of the interdisciplinary evaluation framework and practical examples of player evaluations used in elite football environments.

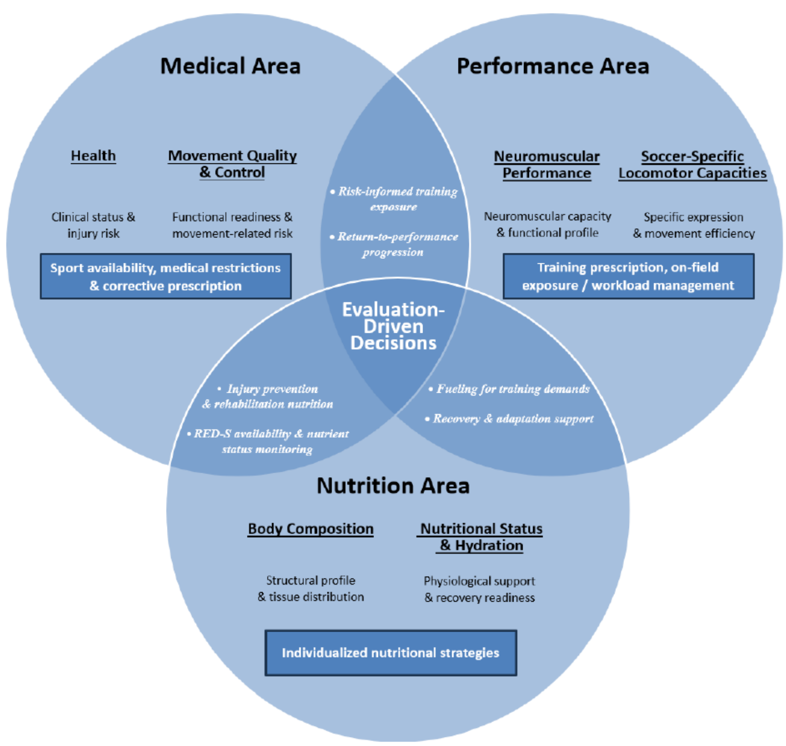


Fig. 1. **Interdisciplinary Evaluation Framework in Elite Football**

Framework Overview

In elite football, the practical challenge of player evaluation is not the availability of data but the ability to interpret multidimensional information in a way that supports consistent applied action. Interpretations based on isolated metrics may lead to misleading conclusions when analyzed outside a coherent analytical framework (1–3). Evaluation systems should be understood as structured processes integrating multiple sources of information to characterize player status and inform decisions. Monitoring processes become more effective when designed around repeatable signals, operational feasibility, and structured communication across departments (4,5). Some approaches propose embedding evaluation procedures within training activities to facilitate continuous and contextually relevant information collection, commonly referred to as invisible monitoring strategies (7).

From a dynamic systems perspective, player status and injury risk emerge from recursive interactions among multiple factors (8), while screening procedures show limited capacity to independently predict injury outcomes (1). Accordingly, the objective of the present framework is to organize evaluation interpretation within a structured system that supports consistent decision pathways in high-performance environments.

This framework should be understood as a governance structure that regulates how evaluation information is interpreted and translated into coordinated operational actions, rather than as a prescriptive testing model. Unlike traditional testing approaches, this framework does not prioritize test selection alone but organizes how evaluation signals are contextualized and weighted to inform coordinated interdisciplinary action. Its contribution lies in structuring the decision pathway that connects evaluation, interpretation, and intervention within applied environments.

While Figure 1 defines the structural components of interdisciplinary evaluation, Figure 2 outlines how this information is operationally interpreted to support decision-making.

The framework integrates three primary organizational areas, medical, performance, and nutrition, which contribute complementary perspectives to the evaluation of player status in elite football. Each area is represented by two functional domains, resulting in a total of six domains: health and movement quality and control (medical); body composition and nutritional status and hydration (nutrition); and neuromuscular performance and football-specific locomotor capacities (performance). This structure enables a balanced and interdisciplinary characterization of player status across physiological, mechanical, and behavioral dimensions.

These domains interact to support integrated decision-making related to player availability, training exposure, and performance development. The model highlights the interdisciplinary nature of evaluation, where decision-making emerges from the integration of multiple perspectives rather than isolated departmental inputs.

Note. RED-S = relative energy deficiency in sport.

Temporal Windows

Evaluation is distributed across temporal windows within the training and competition cycle, reflecting when information becomes operationally relevant. Rather than fixed testing moments, these windows allow practitioners to update player status dynamically throughout the season, consistent with current monitoring practices in elite football environments (6). Baseline assessments primarily establish reference values, although in practice the most recent valid assessment may function as a rolling baseline for longitudinal comparison. Recurrent evaluations provide continuous insight into player status, often through embedded or "invisible" monitoring strategies integrated within training routines (7). Selective assessments are used when additional clarification is required, particularly during return-to-play processes or unexpected performance changes.

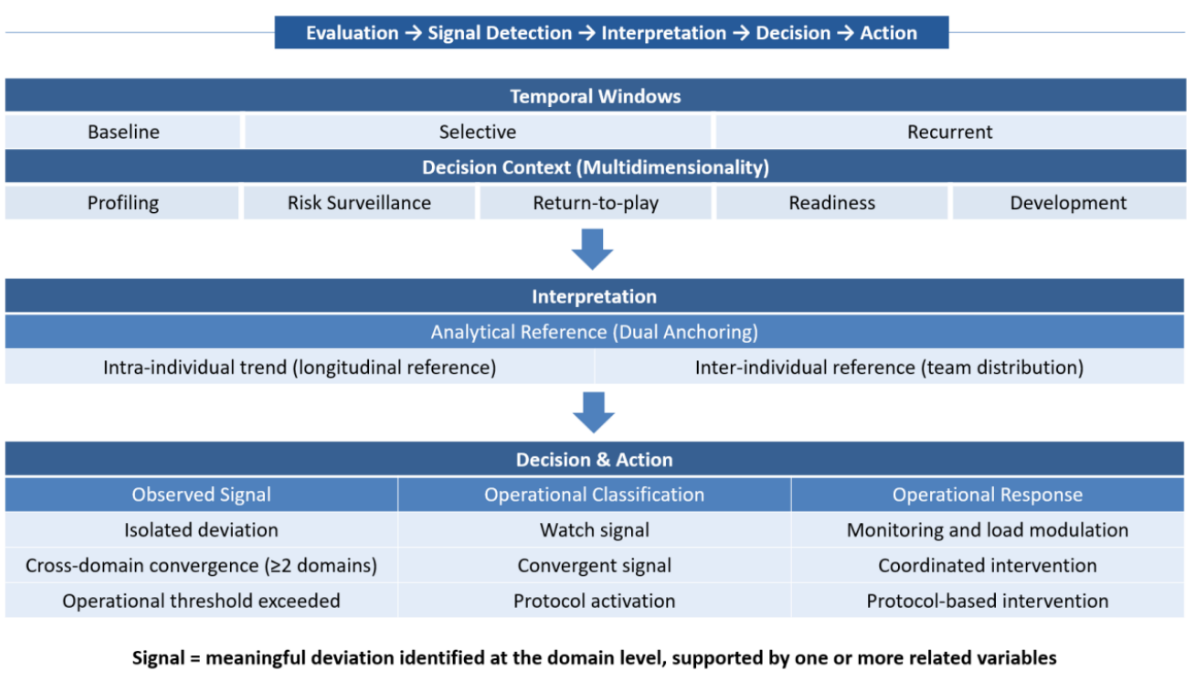


Fig. 2. **Decision-Driven Evaluation Governance Architecture in Elite Football**

Decision Context (Multidimensionality)

Evaluation data do not have inherent meaning in isolation; their interpretation depends on the applied decision context in which they are used. The same variable may inform different decisions depending on whether the objective is profiling, readiness, risk surveillance, development, or return-to-play. This highlights that evaluation is not test-driven but purpose-driven, with the decision context determining how information is interpreted and applied (5).

Analytical Reference (Dual Anchoring)

Evaluation signals are interpreted through dual anchoring, integrating intra-individual trends with inter-individual references. This approach allows practitioners to determine whether observed changes represent meaningful deviations relative to the player's own profile or expected variation within the team. This aligns with current perspectives emphasizing contextual and comparative interpretation of monitoring data in elite sport environments (5,9). This layer represents an interpretative process rather than a direct decision trigger, providing the analytical foundation for subsequent operational actions.

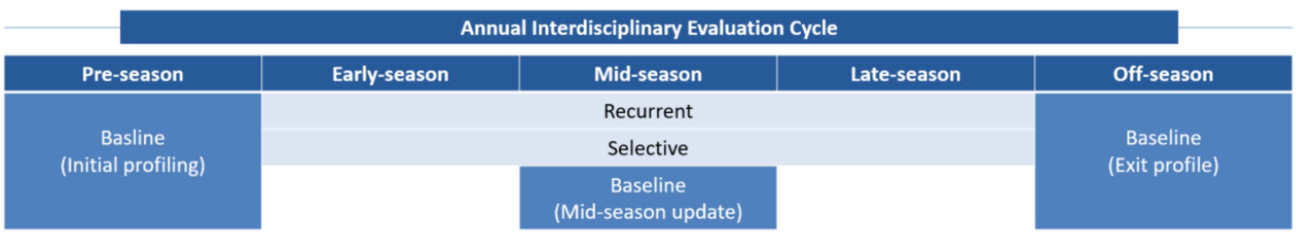
Operational Decision Rules

Following interpretation, evaluation signals are classified according to their structural characteristics rather than isolated magnitude. Isolated deviations generate watch signals, reflecting low-confidence observations that require monitoring, whereas convergence across multiple functional domains increases the operational relevance of findings and is classified as a convergent signal. When predefined thresholds are exceeded, protocol activation is triggered.

These classifications function as hierarchical decision filters within the broader governance system, allowing practitioners to differentiate between normal variation, emerging signals, and actionable conditions requiring intervention. This approach is consistent with models suggesting that injury risk and performance outcomes emerge from the interaction of multiple factors rather than single variables (2,3). Importantly, these thresholds are defined relative to intra-individual trends and internal team distributions rather than fixed normative values, consistent with the dual anchoring framework.

Following signal classification, operational responses are implemented according to the level of intervention required. These responses emerge from coordinated interdisciplinary actions, where each area contributes according to its expertise. The level of intervention reflects the degree of decision confidence and determines the magnitude of training, clinical, or nutritional adjustments. Figure 3 summarizes representative operational responses across intervention levels.

The figure integrates temporal organization (baseline, selective, and recurrent evaluations) with operational decision levels, illustrating how evaluation signals are translated into monitoring, adjustment, or structured intervention. This representation links signal classification with operational responses within interdisciplinary environments.



Interdisciplinary Operational Responses Across Intervention Levels

Operational Response	Medical Area	Nutrition Area	Performance Area
Monitoring and load modulation	No restriction; continue exposure with symptom monitoring; reassess if persistent	Maintain nutritional intake; minor adjustments in hydration and macro/micronutrient intake	Maintain training with adjusted load (↓ volume/intensity or density); avoid excessive neuromuscular load
Coordinated intervention	Targeted assessment; partial restriction of exposure (e.g., limit contact, sprint, or volume)	Adjust energy availability and recovery nutrition strategies; correct nutrient deficiencies and optimize fueling support	Modify training demands (e.g., reduce HSD, COD, or eccentric load); controlled progression
Protocol-based intervention	Full or partial removal; initiate clinical or RTP protocol; clearance required for progression	Structured nutritional intervention (e.g., RED-S management, hydration protocols, supplementation strategy)	Structured return-to-play (RTP) progression; controlled reintroduction of intensity, speed, and volume

Fig. 3. Integrated Temporal and Operational Decision-Making Framework for Interdisciplinary Player Evaluation in Elite Football

Table 1. Decision-Driven Interdisciplinary Evaluation Matrix in Elite Football

Medical Area		Nutrition Area		Performance Area	
Health	**Movement Quality & Control**	**Body Composition**	**Nutritional Status & Hydration**	**Neuromuscular Performance**	**Football-Specific Locomotor Capacities**
Medical history • Anamnesis **B/S** **Basic examination** • Vital signs (HR, BP, SpO_2) **R** • Targeted musculoskeletal examination **S** **Cardiovascular** • Resting ECG **B/S** • Exercise test (CPET) **B/S** • Echocardiogram **B/S** **Clinical laboratory assessments** • Complete blood count (CBC) **B/S** • Basic / comprehensive metabolic panel (BMP / CMP) **B/S** • Electrolyte markers (Na^+, K^+, Cl^-) **B/S** • Renal markers (urea, creatinine) **B/S** • C-reactive protein (CRP) **B/S** • Creatine kinase (CK) **B/S** **Concussion / neurocognitive** • SCAT6 **B/S** • ImPACT **B/S** **Isokinetics** • Knee H:Q (multi-velocity; concentric/eccentric; L/R) **B/S**	**ROM / mobility** • CKC ankle DF (lunge) **B/S** • Hip IR/ER ROM **B/S** • Modified Thomas **B/S** • 90/90 hamstring test **B/S** • Knee extension ROM **B/S** • Hip abduction ROM **B/S** **Movement pattern screening** • Deep squat **B/S** • Single-leg squat (qualitative) **B/S** **Neurodynamic assessment** • Slump test **B/S** **Dynamic balance** • Y-Balance **B/S**	*One primary method selected depending on context* **Anthropometry** *5-way fractionation method* Body mass **R/S** Strech stature **B** Sitting height **B** Skinfolds **R/S** Girths **R/S** Breadths **B** *Instrumental methods* • Bioelectrical impedance analysis (BIA) **R** • Dual-energy X-ray absorptiometry (DXA) **B/S**	**Nutritional biomarkers** *Derived from clinical laboratory assessments conducted within the medical area and interpreted within the nutritional domain* •Iron status (ferritin, iron, transferrin) **S** •Vitamin D (25-OH), B12, folate **S** •Thyroid-related markers (TSH, free T4) **S** •Hormonal status (testosterone, cortisol) **S** **Hydration status** Urine specific gravity (USG) **R/S** **Dietary & Energy Availability Assessment** • 24-h dietary recall **B/S** • 3–7 day food diary **S** • Food frequency questionnaire (FFQ) **B/S** • Practitioner-led nutritional interview **B/S**	**Multi-joint isometric strength (bilateral)** • Isometric squat **R** • Isometric deadlift **R** • Isometric lunge (push/pull) **R** • Isometric hip thrust (90°) **R** • Isometric mid-thigh pull (IMTP) **R** **Segmental / joint-specific isometric strength** • Hip abduction/adduction (short or long lever) **R** • Hip flexor (supine) **R** • Run-specific isometrics (RSIST) **R** • Nordic hamstring hold **R/S** • Calf (knee flexed) **B/S** • Knee extensor dynamometry **B/S** **Eccentric / tissue capacity** • Nordic hamstring curl **R** **Power / neuromuscular expression** • Countermovement jump (CMJ) **R/S** • Squat jump (SJ) **S** • Single-leg hop tests (distance/time-based) **S** **Stretch–shortening cycle (SSC) reactivity** • Drop jump **R** • Repeated pogo jumps (bilateral and unilateral) **R/S** **Force–velocity profiling** • Load–velocity assessment (encoder) **R/S** • Force–velocity profile (squat) **R/S**	**Acceleration / linear speed** • Linear sprint test **R/S** • Resisted linear sprint test **R/S** **Intermittent endurance** • 30–15 Intermittent Fitness Test (30–15 IFT) **B/S** • Repeated sprint ability (RSA) **B/S** **Change of direction (COD)** • Modified 505 test (planned, L/R) **B/S**

Notes: B = baseline; R = recurrent; Notes: B = baseline; R = recurrent; S = selective (context-dependent). Assessments are classified according to their predominant application; however, their selection, frequency, timing, and combination should remain context-dependent and aligned with specific operational and decision-making needs. This matrix is intended as an organizational framework rather than a prescriptive or exhaustive testing battery and does not imply that all assessments should be performed within the same context or time point. Abbreviations: HR = heart rate; BP = blood pressure; SpO_2 = peripheral oxygen saturation; ECG = electrocardiogram; CPET = cardiopulmonary exercise testing; CBC = complete blood count; BMP = basic metabolic panel; CMP = comprehensive metabolic panel; CRP = C-reactive protein; CK = creatine kinase; ROM = range of motion; CKC = closed kinetic chain; IR/ER = internal/external rotation; BIA = bioelectrical impedance analysis; DXA = dual-energy X-ray absorptiometry; USG = urine specific gravity; IMTP = isometric mid-thigh pull; RSIST = run-specific isometric strength test; CMJ = countermovement jump; SJ = squat jump; SSC = stretch–shortening cycle; RSA = repeated sprint ability; IFT = 30–15 Intermittent Fitness Test; COD = change of direction; H:Q = hamstring-to-quadriceps ratio; 25-OH = 25-hydroxyvitamin D; L/R = left/right.

Baseline evaluations

Primarily conducted at the beginning of the pre-season to establish reference values for player profiling. However, additional baseline assessments may be performed during the season when necessary to update the player's status and allow appropriate adjustments. These mid-season baseline reassessments serve as updated reference points for decision-making. Similarly, at the end of the season, a final battery of assessments may be conducted to establish exit profiles, which can serve as the baseline for the subsequent competitive cycle.

Selective evaluations

Applied based on baseline-derived references to further investigate specific deficits, asymmetries, or contextual needs. These assessments are not performed routinely but are triggered when deeper or more targeted analysis is required. In this sense, baseline profiling provides the framework that enables selective evaluations to refine decision-making in specific clinical or performance scenarios.

Recurrent evaluations

Implemented continuously throughout the season as part of the monitoring process. Although they may also be performed during baseline periods, they are not considered baseline assessments, as their primary purpose is ongoing monitoring rather than establishing reference values. These evaluations should ideally be integrated as "invisible monitoring" within the training process and prescribed or periodized according to performance objectives, ensuring alignment with the overall training plan.

Together, baseline, selective, and recurrent evaluations should be understood as an integrated and temporally organized system rather than independent assessment categories. This structure enables the transition from isolated testing toward a continuous, decision-driven process in which evaluation is inherently linked to interpretation and intervention. Importantly, this temporal organization primarily reflects competitive calendars characterized by extended tournament formats; however, the same conceptual framework should be adapted, while preserving its underlying principles, to shorter competitive cycles without altering its structural logic. In practice, these temporal categories inform how evaluation signals are operationalized within decision-making processes, linking profiling, monitoring, and targeted adjustments to coordinated interdisciplinary responses.

Table 1 presents representative examples of commonly used and practically relevant evaluations across medical, nutrition, and performance areas, organized by functional domains, illustrating how different assessment strategies contribute to the interdisciplinary characterization of player status in applied environments. The selected assessments are supported by previous literature regarding their reliability, validity, and applied use in elite football environments (10–20). The purpose of this matrix is not to prescribe a comprehensive testing battery, but to illustrate how evaluation tools can be organized within a decision-driven framework. It does not imply that all assessments should be applied within the same context or time point; instead, their selection, frequency, and combination should be context-dependent and aligned with specific decision-making needs. The table does not assign evaluations exclusively to specific areas. In applied settings, assessments are conducted within an interdisciplinary framework, where different departments may contribute to the same evaluation processes (e.g., strength assessments involving both performance and medical staff). It therefore represents an organizational proposal structured by functional objectives rather than strict departmental boundaries.

Table 2 presents representative examples of integrated metrics and operational profiles derived from the combination of multiple evaluation signals across medical, nutrition, and performance domains. These examples illustrate how different assessment variables may be synthesized into broader functional constructs intended to support operational interpretation and interdisciplinary decision-making in elite football environments.

Example of how evaluation signals are synthesized into a structured report to support interpretation, communication, and interdisciplinary decision-making. In applied environments, monitoring of external load, internal load, and injury-related signals informs the need for context-dependent evaluations, refining player profiling through dual anchoring (intra-individual trends and inter-individual distribution). The convergence of findings across domains guides decision-making and subsequent training interventions, positioning communication as a critical pillar for effective injury risk management and prevention.

Discussion

The proposed decision-driven evaluation governance framework prioritizes decision clarity over the accumulation of evaluation metrics. In applied environments, screening and testing procedures have shown limited capacity to independently predict injury risk, and their practical value lies primarily in the structured characterization of player status rather than deterministic prediction (1,4,8). Accordingly, the framework explicitly separates evaluation governance from predictive claims and focuses on how evaluation information is interpreted to support operational decisions.

Within this framework, key performance indicators (KPIs) represent the measurable outputs of each functional domain and serve as primary inputs for decision-making processes. Their value does not lie in isolation, but in how they are interpreted through contextual dimensions, dual anchoring, and cross-domain convergence. As such, KPIs should be understood as decision-support signals rather than standalone performance metrics.

Training exposure is conceptualized as one input within a broader decision architecture rather than as an isolated determinant of injury or performance outcomes (2,5,6). By integrating multidimensional information, comparative analytical references, and hierarchical decision rules, the framework aims to stabilize decision-making processes in complex high-performance environments. This reflects the interdisciplinary nature of elite football, where information must be interpreted collectively rather than in isolation (5,6). Applied observations in professional environments have also shown that neuromuscular performance and strength-related variables may fluctuate meaningfully across training sessions and competitive periods, reinforcing the need for continuous and context-integrated evaluation strategies rather than isolated testing time points (21). This further supports the need for dynamic and context-sensitive interpretation of evaluation signals within the proposed framework.

Importantly, the framework does not introduce new testing procedures, but rather organizes existing evaluation tools within a structured decision pathway that links evaluation, interpretation, and operational response. Its value lies not in expanding testing batteries but in structuring how evaluation signals are translated into actionable decisions (7,9). This aligns with current perspectives emphasizing practical and context-integrated monitoring strategies in elite sport environments (5,7). The effectiveness of this framework ultimately depends on how evaluation signals are communicated across staff and translated into shared understanding, as decision-making in elite environments is inherently collaborative. In this context, the practical value of evaluation extends beyond data collection and interpretation, requiring clear communication processes that facilitate coordinated interdisciplinary action and alignment with the player.

The primary contribution of this framework is the integration of temporal windows, decision contexts, dual anchoring, and hierarchical decision rules into a unified operational pathway. This approach may support practitioners in moving beyond isolated testing outputs toward a structured and shared interpretation of player status across interdisciplinary staff. By integrating temporal windows, contextual dimensions, dual analytical references, and explicit decision rules, the framework provides a structured governance approach that may facilitate more consistent interdisciplinary decision-making, enhancing clarity, coordination, and decision confidence within complex high-performance environments.

Table 2. Representative Integrated Metrics and Operational Profiles in Elite Football

Area	Domain	Integrated Metric / Profile	Derived From	Operational Interpretation
Medical	Health	Injury Risk Surveillance Index	Medical history + CK + CRP + asymmetry + load exposure	Multifactorial injury susceptibility and tissue stress status
		Availability Status Index	Injury/illness records + training participation	Readiness and availability for training and competition
	Movement Quality & Control	Mobility Composite Score	Ankle DF + hip ROM + hamstring ROM assessments	Global joint mobility status
		Movement Control Profile	Movement screening + balance + neurodynamic assessments	Quality of motor control and movement efficiency
		Inter-Limb Asymmetry Index (%)	Strength + ROM + balance asymmetries	Bilateral functional imbalance
Nutrition	Body Composition	Body Composition Profile	Anthropometry (skinfolds, girths and breadths) , BIA or DXA	Body composition, lower-limb symmetry, training adaptation monitoring, and athlete profiling.
	Nutritional Status & Hydration	Nutritional Status Profile	Dietary intake + laboratory markers	Physiological nutritional sufficiency and recovery-related status
		Hydration Status Index	USG + body mass fluctuations	Acute hydration status
		Energy Availability Estimate	Dietary intake + training/load demands	Relationship between nutritional intake and physiological demands
Performance	Neuromuscular Performance	Integrated Neuromuscular Profile	Isometric strength + CMJ + SSC assessments	Global force–power–reactive neuromuscular function
		Dynamic Strength Index (DSI)	CMJ + IMTP	Relationship between maximal force capacity and ballistic force expression
		Reactive Strength Index (RSI)	Drop jump flight time + contact time	Stretch–shortening cycle efficiency
		Force–Velocity Profile	Load–velocity assessment + squat F–V profiling	Mechanical force–power orientation
	Football-Specific Locomotor Capacities	Sprint Mechanical Profile	Sprint split times + sprint F–V characteristics	Acceleration and maximal velocity mechanical characteristics
		Locomotor Intensity Profile	Sprint distance ($m \cdot min^{-1}$) + sprint frequency ($\# \cdot min^{-1}$)	Relative high-intensity locomotor exposure
		RSA Fatigue Profile	Repeated sprint performance + decrement pattern	Fatigue resistance during repeated high-intensity efforts
		Intermittent Locomotor Capacity Profile	30–15 IFT + RSA + COD performance	Integrated intermittent and football-specific locomotor capacity

Notes: Integrated metrics represent composite indicators derived from multiple assessment variables and should be interpreted within a context-dependent, decision-support framework. Emphasis should be placed on longitudinal trends and the convergence of signals across domains rather than isolated values.

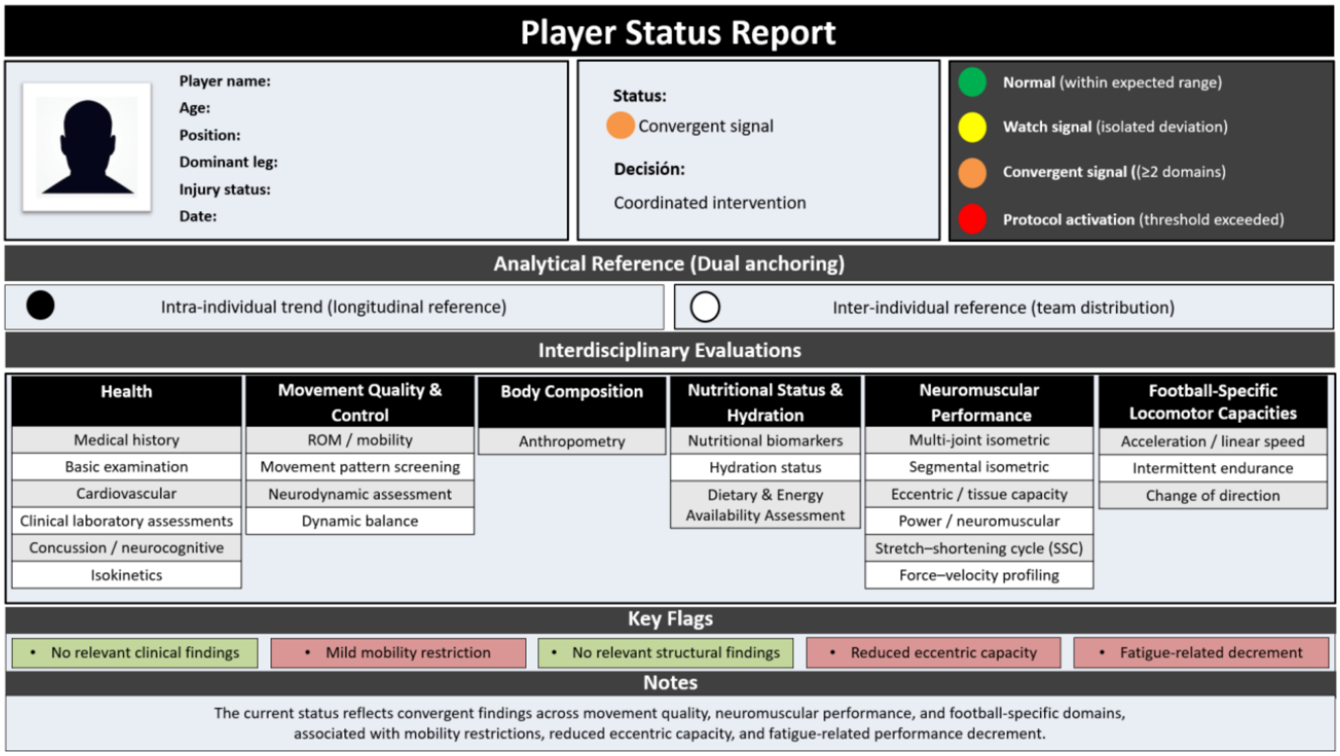


Fig. 4. Integrated player status report within a decision-driven interdisciplinary evaluation framework

Practical Applications

- Evaluation signals should be interpreted using both intra-individual trends and internal team distributions (dual anchoring), allowing practitioners to contextualize observed changes rather than relying on isolated metrics.
- Convergence of signals across multiple functional domains increases decision confidence and may justify coordinated intervention more strongly than isolated deviations.
- Internal reference ranges can guide operational responses; values below internal thresholds (e.g., $<$P30) or showing meaningful negative trends may support preventive strategies (e.g., load modulation, targeted microdosing), whereas more pronounced or persistent deviations (e.g., $<$P10 or sustained decreases across $\geq$2 time points), or cross-domain convergence, may justify structured intervention. Thresholds should be defined relative to individual trends and team distributions rather than fixed normative standards.
- Monitoring strategies may incorporate principles of invisible monitoring, embedding repeatable evaluation tasks within routine training activities to obtain actionable signals without increasing testing burden (e.g., neuromuscular tests integrated into warm-ups).
- Across congested schedules, preseason profiling, and return-to-play phases, evaluation signals can inform adjustments in training density, load exposure, and progression of high-speed or directional demands.
- To support practical implementation, evaluation signals may be synthesized into integrated player status reports (Figure 4), where multidimensional information is translated into structured outputs that facilitate interpretation, communication, and decision-making across interdisciplinary staff.

Limitations

The proposed framework is practice-derived and has not undergone prospective validation. Its implementation may vary depending on organizational context and available resources. Operational thresholds and interpretation criteria are context-dependent and may require adaptation based on competitive level and internal team distributions. The framework does not establish causal relationships between evaluation signals and outcomes and should be interpreted as a decision-support structure rather than a predictive model. Future research should explore its applicability across different performance environments.

Conflicts of interest

The authors declare no conflicts of interest.

Data availability statement

No dataset was generated or analyzed for this technical note.

References

1. Bahr R. Why screening tests to predict injury do not work—and probably never will: a critical review. Br J Sports Med. 2016;50(13):776–780. doi:10.1136/bjsports-2016-096256

2. Windt J, Gabbett TJ. How do training and competition workloads relate to injury? The workload–injury aetiology model. Br J Sports Med. 2017;51(5):428–435. doi:10.1136/bjsports-2016-096040

3. Gabbett TJ. The training–injury prevention paradox: should athletes be training smarter and harder? Br J Sports

Med. 2016;50(5):273–280. doi:10.1136/bjsports-2015-095788

4. Impellizzeri FM, Ward P, Coutts AJ, Bornn L, McCall A. Training load and injury: part 2—questionable research practices hijack the truth and mislead well-intentioned clinicians. J Orthop Sports Phys Ther. 2020;50(10):577–584. doi:10.2519/jospt.2020.9211

5. West SW, Torres-Ronda L, Bourdon PC, et al. More than a metric: how training load is used in elite sport for athlete management. Int J Sports Med. 2021;42(4):300–306. doi:10.1055/a-1268-8791

6. Akenhead R, Nassis GP. Training load and player monitoring in high-level football: current practice and perceptions. Int J Sports Physiol Perform. 2016;11(5):587–593. doi:10.1123/ijspp.2015-0331

7. Leduc C, Weaving D, Dalton-Barron N, et al. Invisible monitoring for athlete health and performance: a call for better conceptualization and practical recommendations. Int J Sports Physiol Perform. 2025;20(6):880–884. doi:10.1123/ijspp.2024-0292

8. Meeuwisse WH, Tyreman H, Hagel B, Emery C. A dynamic model of etiology in sport injury: the recursive nature of risk and causation. Clin J Sport Med. 2007;17(3):215–219. doi:10.1097/JSM.0b013e3180592a48

9. Buchheit M. The numbers will love you back in return—I promise. Int J Sports Physiol Perform. 2016;11(4):551–554. doi:10.1123/ijspp.2016-0214

10. Patricios JS, Ardern CL, Hislop MD, et al. Consensus statement on concussion in sport: the 6th International Conference on Concussion in Sport—Amsterdam 2022. Br J Sports Med. 2023;57(11):695–711. doi:10.1136/bjsports-2023-106898

11. Echemendia RJ, Meeuwisse W, McCrory P, et al. Sport Concussion Assessment Tool—6th edition (SCAT6). Br J Sports Med. 2023;57(11):622–631. doi:10.1136/bjsports-2023-107036

12. Markovic G, Sarabon N, Pausic J, et al. Adductor muscle strength and strength asymmetry as risk factors for groin injuries among professional soccer players: a prospective study. Int J Environ Res Public Health. 2020;17(14):4946. doi:10.3390/ijerph17144946

13. van Dyk N, Behan FP, Whiteley R. Including the Nordic hamstring exercise in injury prevention programmes halves the rate of hamstring injuries: a systematic review and meta-analysis of 8459 athletes. Br J Sports Med. 2019;53(21):1362–1370. doi:10.1136/bjsports-2018-100045

14. Powden CJ, Dodds TK, Gabriel EH. The reliability of the Star Excursion Balance Test and Lower Quarter Y-Balance Test in healthy adults: a systematic review. Int J Sports Phys Ther. 2019;14(5):683–694. doi:10.26603/ijspt20190683

15. Claudino JG, Cronin J, Mezêncio B, et al. The countermovement jump to monitor neuromuscular status: a meta-analysis. J Sci Med Sport. 2017;20(4):397–402. doi:10.1016/j.jsams.2016.08.011

16. Grgic J, Scapec B, Mikulic P, Pedisic Z. Test–retest reliability of the isometric mid-thigh pull maximum strength assessment: a systematic review. Biol Sport. 2022;39(2):407–414. doi:10.5114/biolsport.2022.106149

17. Altmann S, Ringhof S, Neumann R, Woll A, Rumpf MC. Validity and reliability of speed tests used in soccer: a systematic review. PLoS One. 2019;14(8):e0220982. doi:10.1371/journal.pone.0220982

18. Buchheit M. The 30–15 Intermittent Fitness Test: accuracy for individualizing interval training of young intermittent sport players. J Strength Cond Res. 2008;22(2):365–374. doi:10.1519/JSC.0b013e3181635b2e

19. Dos'Santos T, McBurnie A, Thomas C, Comfort P, Jones PA. Biomechanical determinants of the modified and traditional 505 change of direction speed test. J Strength Cond Res. 2020;34(5):1285–1296. doi:10.1519/JSC.0000000000003439

20. Dugdale JH, Sanders D, Hunter AM. Reliability of change of direction and agility assessments in youth soccer players. Sports (Basel). 2020;8(4):51. doi:10.3390/sports8040051

21. Lara-Desales M, Martínez-Ruiz EA, Buckley SE, Barcala-Furelos M, Lago-Fuentes C. Evaluation and analysis of strength values assessed pre and post pitch training session in an MLS team during the season and after the off season. Retos. 2024;61:405–414. doi:10.47197/retos.v61.107999