

Contact Load



INTER
NATIONAL
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PLAYERS



World Rugby Advisory Group on Contact Load

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Background

The management of training load is essential for elite performance and injury-prevention. In fact, performance and injury-prevention cannot be discussed independent of one another, since squads that retain higher proportions of healthy, uninjured players for longer, are known to perform better. **Load management is thus an injury prevention strategy and a performance optimization strategy.**

International Rugby Players and World Rugby recently conducted a global survey of the professional game to better understand how players currently engage in contact during training. This survey, a summary of whose results can be found [here](#), was used in combination with research on injury risk and injury surveillance studies, to inform an expert working group that was convened to advise on best practice and create contact training guidelines for the elite global rugby community.

Contact load is the particular focus of these guidelines, since contact training is known to have a relatively high injury incidence. It is thought to contribute to match-play injury risk as a result of cumulative load and fatigue. It also creates risks for head impacts.

Although the incidence of training injuries is low relative to that of matches, the volume of training performed means that a relatively high proportion (35% to 40%) of all injuries during a season occur during training. Since the training environment is highly controllable, coaches should be seeking to reduce injury risk and cumulative contact load to the lowest possible levels that still allow for adequate player conditioning and technical preparation.

Objectives of the guidelines

This guideline aims to describe expert consensus recommendations for **in-season, full-contact and controlled-contact training in elite rugby environments**. The essential requirement for coaches is to identify and implement the lowest “dose” of contact training that still delivers the necessary performance capability and player preparation.

While these guidelines are targeted at the elite game, the principles of load management and measurement underpinning them are appropriate for all levels below the professional game. Coaches at all levels are encouraged to adhere to these principles within their own contexts. The recommendations made for maximum contact load are also applicable to all levels, though coaches at levels below the professional game should recognize that given limited training time for part-time players, their contact loads should be lower than those recommended as maximal for the professional game.

The current recommendations also do not cover the pre-season period and we acknowledge that the requirements for the management of the pre-season contact load are likely to differ. The need to ensure that any contact is graduated and periodised is particularly important in the preseason where work-loads during the week tend to be heavier and players are returning from an off-season period.

Contact load within the overall load management strategy

In order to identify the optimal “dose”, it is important to recognize that contact load is one component of physical load, which itself is a contributor to overall load. Managing contact load is possible only in the context of a broader understanding of load management. Holistic load management is described in [The Load Management Guidance for coaches](#), and the same principles apply to contact load. That is, it incorporates and utilizes the principle of progressive overload in sufficient volume, at the appropriate intensity, with adequate recovery to minimize injury risk while allowing adaptation to occur.

While the focus of this guidance is specifically contact training, coaches must recognize that other forms of training, including skill sessions with zero contact, gym-based conditioning work and running activities also contribute significantly to physical load, and they must manage these in a reciprocal or complementary manner with full and controlled contact training.

Elements of contact training

To manage the risks described above, while achieving the desired optimal preparation of players, four elements of contact must be managed. These four are described by the figure below.



- **Intensity** refers to the degree or size of the force of the contact impacts within a session/drill
- **Density** is how frequent impacts are in a given period, or thought of differently, the period between impacts within a contact session/drill
- **Unpredictability** relates to the degree of control or planning of a drill, which affects a player's ability to anticipate the actions of an opponent
- **Volume** refers to the amount of contact within a session/drill

Contact intensity



- Contact intensity can be understood as the relative impact forces experienced by players during a contact session or drill
- Risk of injury and excessive overall contact loads are increased as contact intensity increases. Therefore, coaches must prioritize the control or management of this contact element to reduce risk
- Intensity is primarily a function of speed into contact, the size of the area where the drill is occurring, and the player's application of force in contact
- It may be best asked as "How big were the impacts in that session?", which may be described in subjective terms, using a scale from 1- 10, where 1 is almost zero contact (light touch), and 10 is match level contact intensity
- It may also be quantified using objective data such as that obtained from instrumented mouthguards, though the relationship between perceived intensity and these measured outputs has yet to be established in a robust way

For simplicity, we advise **dividing contact intensity into two levels**

Full contact

- Players on both sides of the ball enter and complete contact without physical restraint
- Occurs without the use of shields/pads, thus involves body on body impact
- No or very few restrictions on the speed of players into contact
- Contact is completed (to ground)
- Contact intensity ranges between 8 and 10 on a contact intensity scale

Controlled contact

- Players are restrained in terms of speed and force application during contact
- Shields and pads* are used to avoid body on body impacts
- Focus may be on technical execution at a range of reduced speeds, using reduced area size and distances between players
- Contact intensity falls below 8 on a contact intensity scale

* Coaches must pay particular attention to the maintenance and condition of shields, pads and other equipment (including scrummaging machines) to ensure maximal safety for players in these controlled contact sessions

Contact density



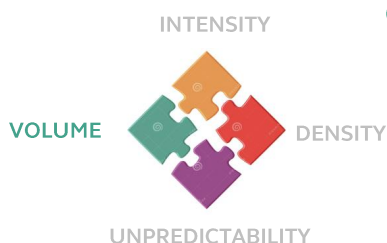
- Contact density can be thought of as the frequency of contacts within a given session or drill per unit of time. If contact is frequent, or if recovery/inactivity periods between contact are short, then density is high. In contrast, where each contact is separated by longer periods of no contact, density is low
- Density may be measured as contacts per minute, or subjectively as being “High”, “Medium”, or “Low”
- Increased contact density within a session or drill may increase injury risk and overall contact load

Contact unpredictability



- Contact unpredictability refers to the degree to which a player can anticipate their direct opponent’s actions during contact activities
- High unpredictability increases the risk of injury, as a result of accidental impacts, or impacts that players are not adequately prepared for
- Unpredictability can be graded as “High”, where players must react to opponent’s unknown actions, “Medium” where some control is imposed by coaches, and “Low”, where a high degree of structure or planning exists

Contact volume



- Volume is the number of contacts a player will experience in a session/drill
- This is indirectly measurable as the minutes of contact time, but this measure alone may not accurately capture the true exposure to contact, since it would fail to account for contact density (see above)
- Therefore, minutes of contact is a proxy for contact volume, but coaches must be sensitive to how overall contact load is influenced by contact

The management of contact load in practice

The four contact elements described previously are all crucial for coaches to understand and apply to manage contact load appropriately. Their inter-relationships with one another are particularly important, because overall contact load is a function of all four elements. For instance, if a contact drill or session has a very low density of contacts, then its volume or intensity may be increased before the overall contact load becomes excessive.

That said, for practical reasons, both the planning and measurement of contact load should be as simple as possible. The easiest contact elements to measure are:

- **Contact intensity**, which we advise be divided into Full Contact for high intensity, and Controlled Contact, for lower intensity ratings, as described previously
- **Contact volume**, since this can be assessed indirectly as training time, notwithstanding the influence of density on the true volume of contacts experienced by a player during a drill/session

Therefore, while the contact density and unpredictability elements are crucial to consider, we recognize the simplicity of contact assessment through intensity and volume will be easiest to adhere to for coaches, and to report on for players. A conceptual example of how contact density and unpredictability impact on overall contact load is provided in [Appendix one](#).

The traditional tool used to measure training load has been the product of Intensity (rated by the player on a scale from 1 to 10) and time (in minutes). For instance, a session lasting 50 minutes, rated by a player at 6 out of 10 for intensity, would produce a load of 300 units.

A similar principle, with slight modifications, may be used to plan, assess and track contact training loads, as is described below.

Assessment of contact training loads (The Contact Index)

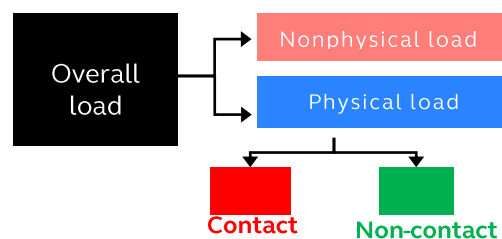
Contact intensity should be assessed by asking the player for their subjective perceptions of the size or intensity of the impacts they experienced during a session. Note that this is not necessarily the same as effort levels, which may be high during non-contact training sessions. Rather, the player is reporting how closely contact intensity replicates what they experience during a match. The scale that is used for this purpose should be numerical (1 to 10) and may use verbal anchors relating training intensity to match intensity to orient the player into assessing and evaluating a session or drill. Recall that generally, Full contact training would be rated 8 or higher, while controlled contact would typically be scored beneath a value of 8.

Example of Contact Intensity



Contact volume can be assessed simply as the number of minutes that a player engages in a given drill or session that includes contact elements, irrespective of their intensity.

The Contact Index is thus the product of the **contact intensity** and **contact volume**, and should be documented as part of an ongoing load management strategy, bearing in mind that contact load is one element of physical load, which is itself a component of overall load, as shown in the schematic figure on the right. Coaches should recognize the context of contact load within the overall programme and manage the other loads as described in the Load Management Guideline for Coaches.



The coach's toolkit – planning and monitoring contact load

Coaches must consider the four elements in the context of the overall load management strategy, and then plan for appropriate contact load. Below is a checklist of questions a coach may consider in the planning and execution of training that includes contact load. An important consideration for coaches is that the previous week's match or training loads influence recovery, and thus the degree to which players are able to tolerate future load. This will alter load planning, and variation between weeks should be expected depending on these team and individual factors.

The checklist

1. How well recovered and prepared are the players undertaking the contact session?
2. What is the improved outcome sought through the contact training session?
3. What is the likely **contact intensity**? What speed/how big will the impacts be?
4. What is the likely **contact density**? How many contacts are likely to occur?
5. How controlled or **predictable** will the required contacts be?
6. What's the total **volume** of the session, in minutes?
7. What is the expected **contact index** (anticipated contact intensity x session duration)?
8. When are any breaks planned to recover and limit residual fatigue in order to mitigate against injury?
9. What alternative activities will be undertaken by those not 'fit for contact'?
10. How will contact parameters be set out and supervised?

Monitoring

A plan or expectation for contact elements and the overall contact index or load is essential, because coaches can then assess whether their expectations of a session are realized

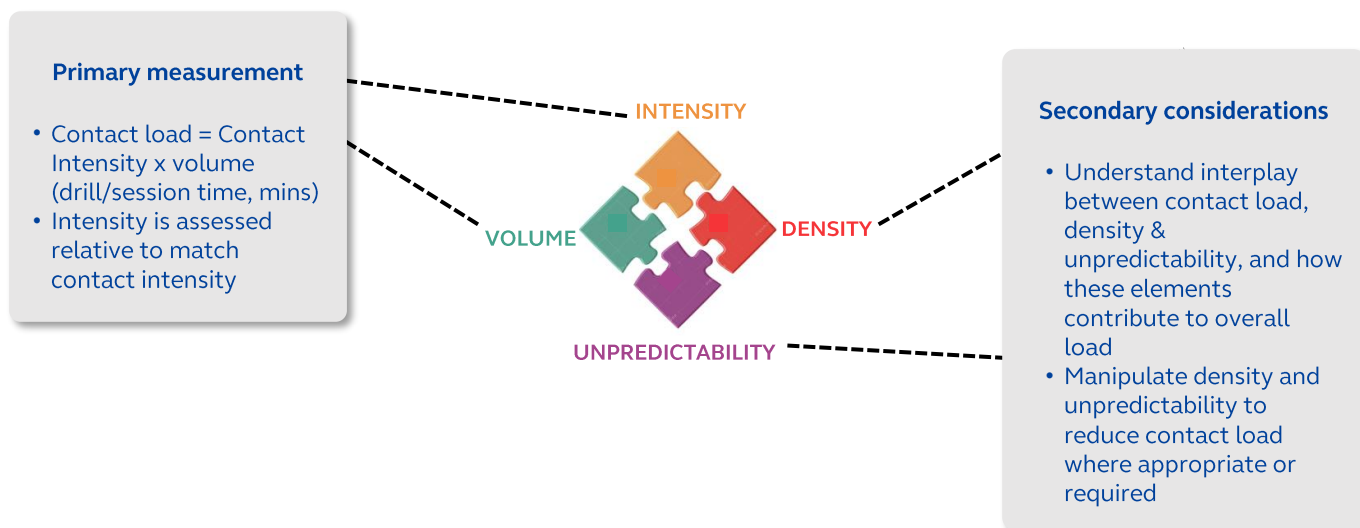
Players may be asked to provide their own perceived contact intensity, which is then matched or compared to the coach expectation for intensity

Where players report higher intensity than coaches had forecast, or higher intensities than are typical for a given player, adjustments in intensity, volume, density or unpredictability should be made in future to avoid excessive load

It is important that players understand the intended intensity of a contact drill or session, and coaches must clearly communicate the desired actions and "rules of engagement" prior to commencing. The training session should also be officiated and supervised to ensure that live contact does not become excessively intense and potentially injurious.

Summary: Planning, assessing and managing contact load

- Contact load is of particular importance to coaches because it is necessary for the appropriate conditioning of players, both to prepare them for performance demands, and to prevent injury
- Contact training can be thought of as comprising four elements:
 - Contact intensity
 - Contact volume
 - Contact density
 - Contact unpredictability
- For each of the above four elements, an increase will contribute to a greater overall contact load, and thus risk of injury or the risk factors described previously
- Each component must be understood in order to be managed, with the interplay between the four elements determining the overall contact load
- In terms of measurement, for simplicity and ease of use, we **advise that contact intensity and contact volume be the primary metrics used for planning, assessing and optimizing contact load.** Note that this does not negate the need to consider both contact density and contact unpredictability, and coaches must be mindful of these elements, particularly with reference to specific position groups and drills where density and unpredictability may interact with intensity to create risk, as was described previously



The application of contact load during an in-season training week

There is no single optimal pattern or structure of contact load within a week. Coaches should use their discretion and knowledge to manage the timing and magnitude of contact load, while balancing the requirements to allow full recovery from matches during the season.

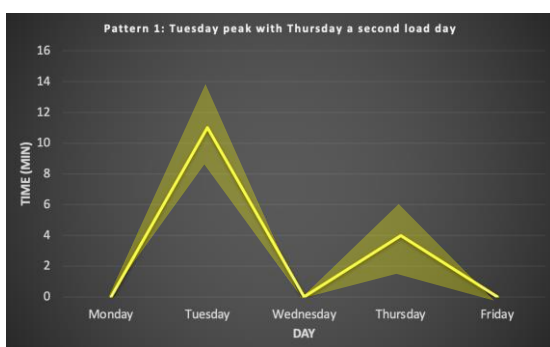
A number of principles or concepts should however be respected when considering how load should be applied during a week. Because full contact load is most injurious and creates the greatest risk, we first explore the principles that should govern full-contact training. We will subsequently look at how controlled contact, lower in risk, may be integrated into a typical in-season training week. The following are the key principles that influence full contact load structure:

Principles of full contact load application

1. Full contact load in training should occur on **only two days per week**
2. Monday should be a zero full contact load day to allow recovery from the preceding weekend's match
3. Friday should be a zero full contact load day to allow recovery from the training week in advance of the upcoming match
4. Thus, the **two full contact load days per week should be chosen from Tuesday, Wednesday and Thursday**
5. The volume of full contact training (high intensity contact) should be limited to 15 min per week

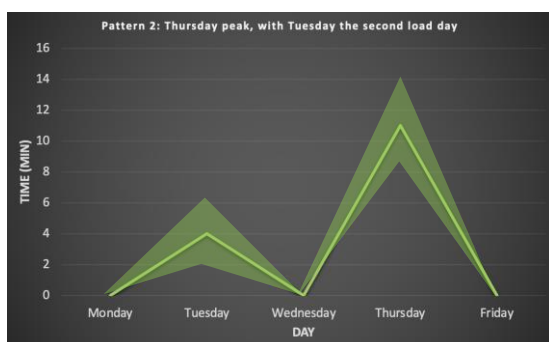
**note that these principles apply to a typical in-season week where matches are played on consecutive Saturdays (or Sundays). In some instances, shorter (Friday match) or longer (bye weeks) turnarounds may require small adjustments to accommodate the general principles*

These principles enabled the working group to identify three patterns, supported by what was reported in the survey of the elite game. These patterns are summarized below, and focus specifically on the volume of full contact training, which was defined previously as distinct from controlled contact. Controlled contact recommendations are made subsequently. Coaches are reminded to consider density and unpredictability as contributors to the overall contact load, as explained previously.



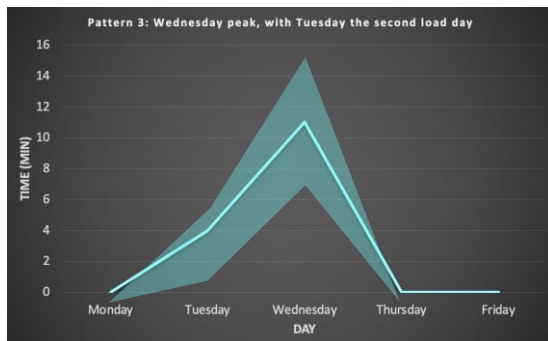
Pattern 1: Tuesday peak with Thursday a second load day

- Peak full contact training occurs on Tuesdays, while a second day with full contact training occurs on Thursdays
- A maximum weekly volume of 15 minutes of full contact training is advised
- The recommended limits can be met in any combination of training on Tuesdays and Thursdays, as indicated by the shaded areas in the figure to the left



Pattern 2: Thursday peak, with Tuesday the second day load

- This pattern is a reverse of Pattern 1, where peak full contact load occurs on Thursday, while Tuesday is a second fully contact load day
- The maximum weekly full contact load remains 15 minutes
- The recommended limits can be met in any combination of training on Tuesdays and Thursdays, as indicated by the shaded areas in the figure to the left



Pattern 3: Wednesday peak, with Tuesday the second load day

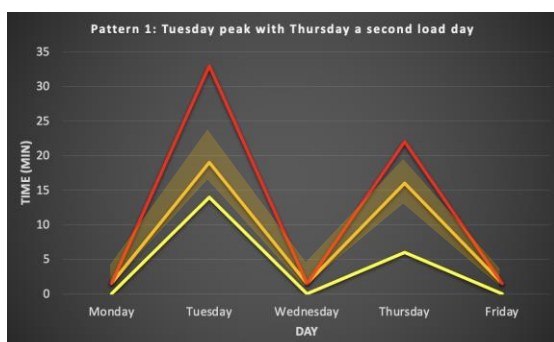
- Full contact training occurs on Tuesdays, building to a peak on Wednesday
- This pattern allows for two full days of recovery with zero full contact training prior to a Saturday match
- The maximum weekly full contact load remains 15 minutes

Integration of Controlled Contact into weekly contact load

By definition, controlled contact is less intense, and thus less likely to create injury risks that are seen for full contact training. However, the principles that govern full contact training, described previously, still broadly apply to controlled contact training, though with small allowable modifications. These modified principles are summarized below, with the subsequent figures showing the three patterns with controlled contact added to full contact to produce total contact.

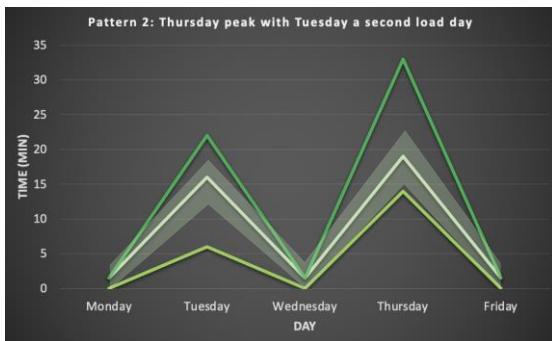
Principles of controlled contact load application

1. Since controlled contact is less injurious than full contact, the weekly recommended volume is 40 minutes (compared to 15 minutes of full contact training)
2. Controlled contact may occur on all days of the week, but coaches are encouraged to prioritize recovery by allowing at least one day of zero contact of any type
3. Three days per week should have reduced controlled contact load, in addition to zero full-contact load, as per the previously described patterns for full contact
4. Controlled and full contact are likely to be used in the same session, and our recommendation is that controlled contact is used before full contact as part of contact progression



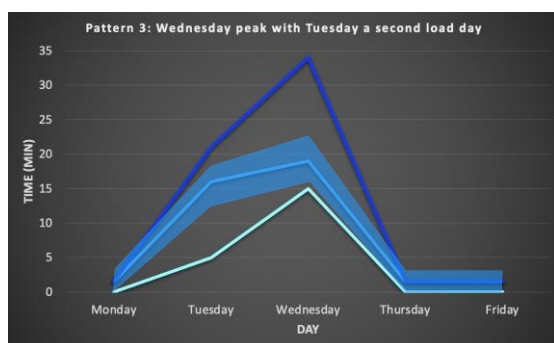
Pattern 1: Tuesday peak with second load day on Thursday

- The pattern for **controlled contact** is the same as for **full contact**, with peak load occurring on Tuesdays, with Thursdays the second load day
 - Small volumes of controlled contact may be performed on Mondays, Wednesdays and Fridays, but coaches are advised to apply these with caution and to implement mitigation strategies described previously. Orange shading indicates ranges of recommended volumes
 - The sum of full contact and controlled contact creates the **total contact load** of a training week, which also follows the two-peak pattern
- The sum of full contact training and controlled contact training creates total contact training per week. The expert group recommends a maximum total contact time of 55 minutes per week, following the above pattern of Tuesday and Thursday peaks, with the other three days displaying zero full contact and minimal controlled contact training, at the coaches' discretion



Pattern 2: Thursday peak with second load day on Tuesday

- Pattern 2 is a mirror image of Pattern 1, with Thursday the primary load day and Tuesday a secondary higher load day
- **Controlled contact loads** on Mondays, Wednesdays and Fridays are not necessarily zero, but should be kept to a minimum
- **Total maximum contact load** remains 55 min per week, comprising 15 minutes of full contact, and 40 minutes of controlled contact



Pattern 3: Wednesday peak with second load day on Tuesday

- Pattern 3 is characterized by moderately high **controlled contact load** on Tuesdays, and a controlled contact peak on Wednesdays
- Mondays, Thursdays and Fridays are allocated for very low controlled contact days, and zero full contact
- The **total controlled contact** load remains 40 minutes per week, allocated at the discretion of coaches within the recommended ranges and pattern

Conclusion

- The overall guiding principle is that high contact loads should be applied on two days per week only
- This imposes a zero full contact training requirement on three days per week, with only small volumes of controlled contact per week advised
- Mondays and Fridays should be zero full contact load days, with very low controlled contact loads, to allow for maximum recovery from matches, and preparation for upcoming matches, respectively
- Coaches may apply discretion in terms of the allocation of the recommended maximum of 15 minutes of full contact and 40 minutes of controlled contact per week, but should adhere to the principles described above

Live Set Piece contacts

Set piece training can vary in terms of contact intensity and thus risk of injury and higher contact load, and so it is important to understand the types of set piece training that warrant particular consideration within the contact load guideline.

Live set piece contacts refers to set piece drills or training that involves moderate to high intensity contact. For the purposes of these load management guidelines, live set pieces comprise scrums, lineouts, kickoff receiving, and mauls. Live set piece contact thus occurs when any of these set pieces are trained in a fully contested manner, with an intensity approaching, or equal to, that of matches (Rating of contact 8 or higher).

Live set piece contact does not include scrums using scrummaging machines, set-ups, or low/zero contact set piece work conducted among smaller groups of players where the contact intensity is

very low. It also does not include pick and go drills, which should be assessed as “full contact” training.

With respects to the management of live set piece contact, coaches have two approaches within the overall contact load management strategy. The first approach treats live set piece training sessions as part of the full contact or controlled contact load, which was described previously. That is, live set piece training such as scrums, maul and lineout work can be assessed and identified as being full contact or controlled contact, as per the guidelines described previously, and then be counted as part of the overall contact load within a week. If this approach is adopted by coaches, note that the maximum recommended weekly volume of 15 minutes for full contact and 40 minutes for controlled contact must be increased to accommodate additional training time for live set pieces.

A second approach treats live set piece contact as a separate contributor to overall load. This is the approach we use in these guidelines, where live set piece training is treated as additional to full contact and controlled contact load. This approach is selected because live set piece sessions/drills will involve almost exclusively forwards, and so are best kept distinct from other contact training that may involve all players. This also affords coaches the opportunity to adopt a more flexible structure with respects to live set piece play during the training week, since the patterns that were found and described for live set piece training were more variable than those found for full contact and controlled contact training.

It is important to consider that by virtue of set piece contact, forwards will experience significantly more total weekly contact than backs. Coaches must be cognizant that the previously described full contact and controlled contact recommendations will be in addition to set piece contact load, and may need to control or reduce the time in full and controlled contact for forwards, to ensure that they are not excessively loaded.

In future, the expert working group may advise on a specified number of set pieces of each type, rather than a weekly duration. However, this is presently not possible, and research will be undertaken to establish how much set piece contact currently occurs, and what the implications of that contact are for injury risk. This may allow a future revision of these guidelines to prescribe set piece events

Principles of live set piece contact

1. Live set piece contact may be trained on any day of the week, though the previous principles regarding zero full contact on Mondays and Fridays, and very low total contact on three days per week should be adhered to
2. Where possible, coaches should prioritize strategies to reduce contact load during set piece training. This may be achieved by including smaller numbers (building up from 3 vs 3 to 8 vs 8), and regulating force application (eg scrum training)
3. The density and unpredictability of contacts should be managed to prevent live set piece training from becoming excessively fatiguing or high risk for forwards
4. Coaches must be mindful of which players among the forwards are exposed to the highest set piece loads and plan accordingly
5. A recommended maximum weekly live set piece contact training of 30 minutes is advised. This recommended volume may be divided between Full Contact set piece and Controlled Contact set piece at the discretion of coaches, within the principles described previously
6. The pattern of set piece contact broadly follows that outlined for controlled contact, with Mondays and Fridays having very little, and a choice of two days of Tuesdays, Wednesdays and Thursdays allocated for the bulk of set piece training

7. Note that the above recommendations refer to live set piece play only. That is, set piece training that is described as having an intensity close or equal to that of matches, with a rating of contact 9 or higher. Set piece drills with reduced or minimal contact and are not counted in the above recommendations.

Summary recommendations for total contact load

The table below summarizes the recommendation for total weekly contact in training, using the approach where set piece training is categorized and managed separately from full contact and controlled contact training load, as described above.

	Contact training recommendation
Full contact load	15 minutes maximum per week. Full contact includes pick-and-go drills, tackle and ruck drills, and match play without shields or pads, at high contact intensity ratings
Controlled contact load	40 minutes maximum per week. Controlled contact includes all drills involving contact, as described for full contact training, but at reduced intensity and/or using shields or pads
Live set piece contact	30 min maximum per week. Comprises scrums, mauls, lineouts and kick-off receptions that are performed at or close to match intensity.

Other contact load considerations

These guidelines are applicable to the majority of squads who have played at the previous weekend, or will play in the upcoming week, since they prioritize recovery from match play and preparation for future play. However, there will be numerous situations where players within a squad may be allocated either more or less contact load depending on various contextual factors, including:

- **The age/maturity of players:** Players who are particularly young and/or inexperienced with contact may require a reduction in contact load, which can be achieved by reducing intensity (full contact to controlled contact), volume, density or unpredictability, as described. Similarly, older players whose recovery times may be extended may require less contact load on Tuesdays than was advised here.
- **Current or previous injury:** Injuries are risk factors for future injuries, and so players with a history of certain injuries may require adjustments in load strategy that reduces their specific risks. Those players currently injured will also require contact load adjustments, and should in particular reduce the intensity and unpredictability of contact until their rehabilitation process is completed

- **Playing time (acute and chronic):** Players who have had no or minimal playing time in the previous week or month may be required to increase contact loads above what has been advised here. Similarly, players who will not be selected for an upcoming match, or where a team has a bye weekend, may increase contact loading, at the discretion of the coaches. We do however urge caution and conservative approaches in these situations. Conversely, players who have been exposed to high contact loads in recent matches and training will require reduced contact load to enable sufficient recovery
- **Women's rugby** – the four elements of contact load have not been described with specific reference to women's elite rugby. The principles outlined in this guidance, particularly those regulating the pattern of contact load through a typical week, are likely to be the same for men and women, but further research is required to establish the optimal contact load in women players. This is recommended to be explored as part of World Rugby's commitment to research on the women's game. Particular attention should be paid to the potential impact of the phase of the menstrual cycle on injury risk, and how contact load may need to be altered to mitigate this injury risk

Conclusions/summary

These guidelines aim to advise coaches on how best to plan, allocate and manage contact loads during the **in-season in elite professional rugby**. The approach taken is:

- Consider that contact load can be divided into full contact, controlled contact and live set piece play, where the key differences are the intensity of contacts
- The maximum volume of each contact type per week has been recommended as
 - 15 minutes maximum per week for full contact
 - 40 minutes for controlled contact
 - 30 minutes or lower of set piece contact
- Three patterns of contact loading have been described. These patterns enable key load management principles to be adhered to, namely:
 - Mondays and Fridays have zero full contact load, and very low controlled and set piece load
 - Of the remaining three days per week, two are chosen to be the primary and secondary load days, where full contact, controlled contact and live set piece training are performed
 - Very controlled contact may be performed on the other days of the week, but the recovery of players from the previous weekend, and preparation for the upcoming match should be prioritized
- In addition to contact intensity and volume, the density and unpredictability of contact are crucial elements that must be managed to reduce risk and optimize preparation
- It is advised that contact load be measured or quantified as part of the overall load management process. This measurement should be the product of contact intensity, using the provided scale from 1 to 10, and the volume of contact, in minutes, to produce a total contact score. Note that this score does not factor in density or unpredictability, though these may be quantified or understood to increase overall contact load as described, and should thus be borne in mind, if not necessarily quantified and documented

Appendix One

The interplay between intensity and other contact elements

As described, four contact elements interact to determine the overall contact load and thus risk. Volume and intensity are the easiest to measure since volume can be measured as training time in minutes, while intensity can be measured by asking players to rate the intensity of the impacts they experience on a scale from 1 to 10.

This simplicity makes volume and intensity the recommended metrics for tracking contact load, as is described subsequently. Further, contact intensity forms the basis for definitions of full contact and controlled contact. However, coaches must recognize and remain mindful of how the other two elements – density and unpredictability – influence contact load. The illustrations below illustrate how **Contact Intensity** interacts with **Contact Density** and **Contact Unpredictability** to influence **overall contact load**.

Illustration of contact intensity and density interaction

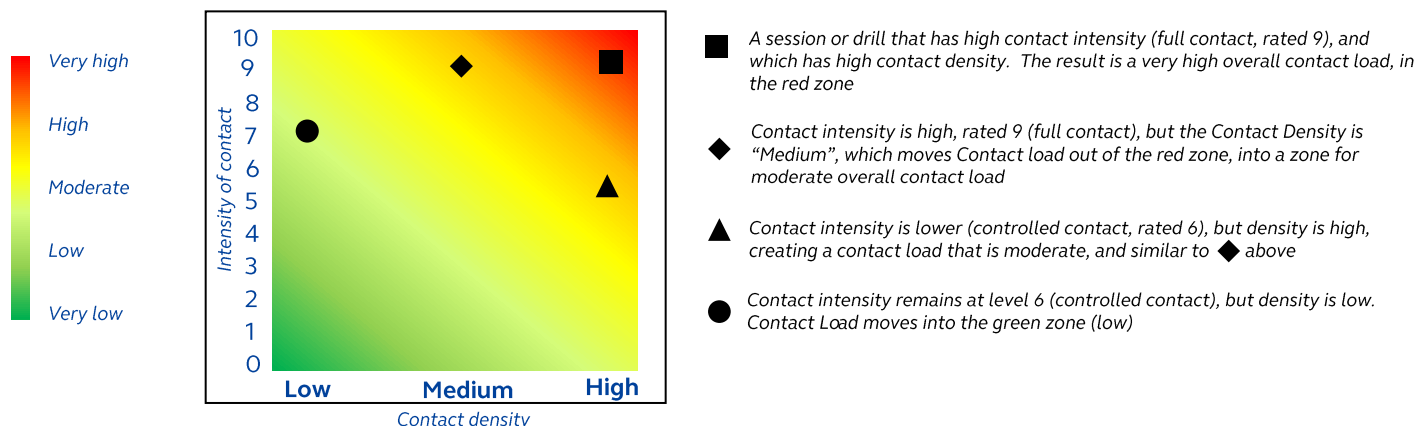
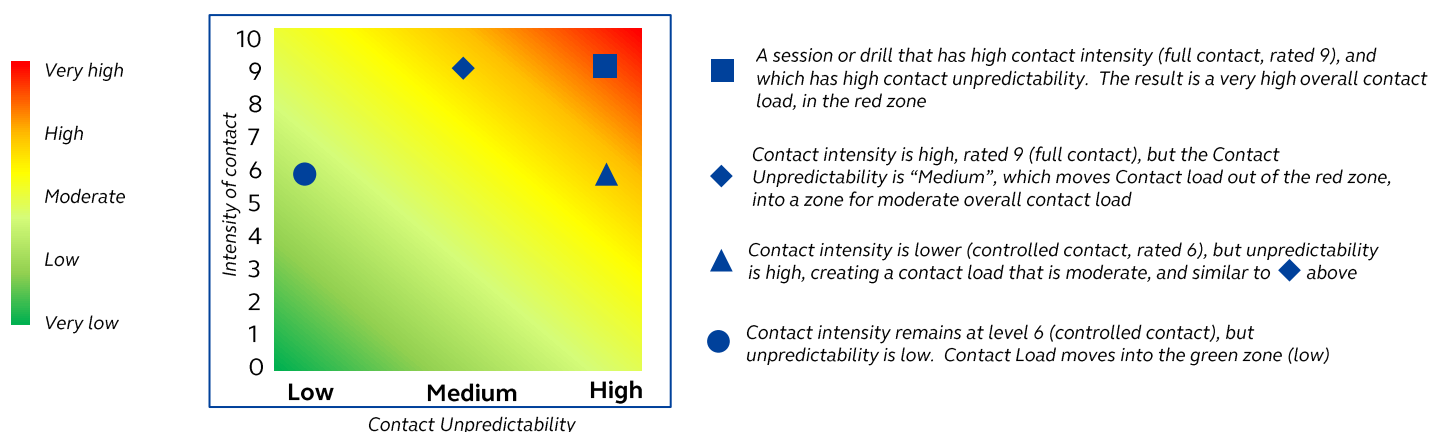


Illustration of contact intensity and unpredictability interaction



Global survey, contact load

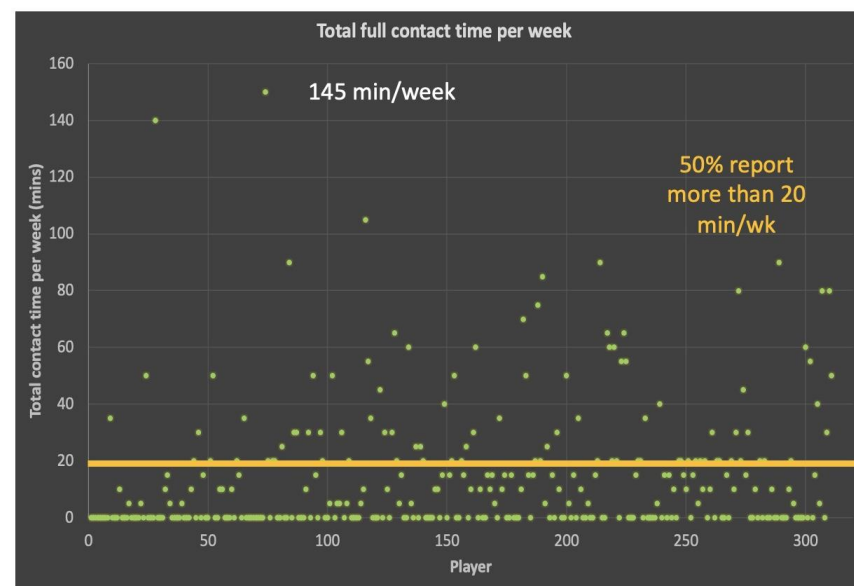
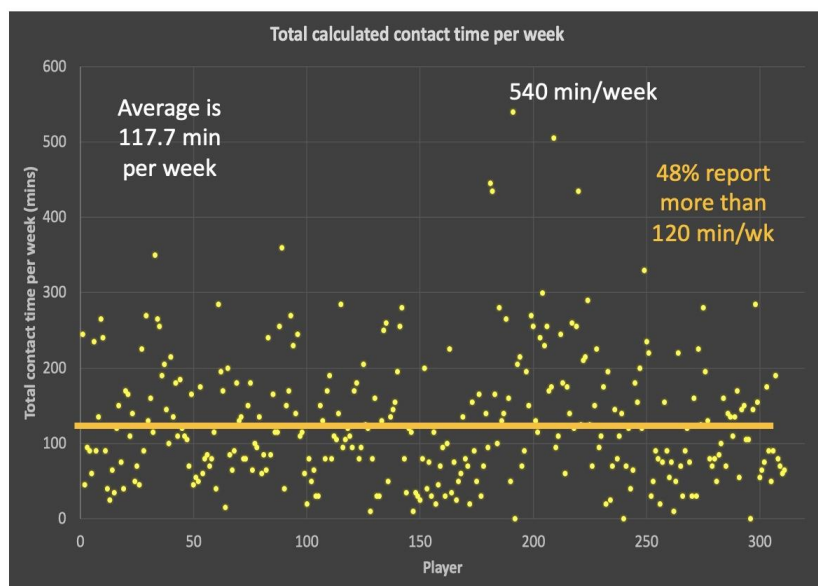
The elite player survey was sent to all professional competitions, with responses received from those named below



A total of 594 responses were received across **13 men's competitions** and **five women's competitions**

Key findings

Because the specific competition response numbers varied widely (from n=1 to n=145), the results are largely analyzed collectively, to portray an overall picture of reported contact load



Total contact time comprises:

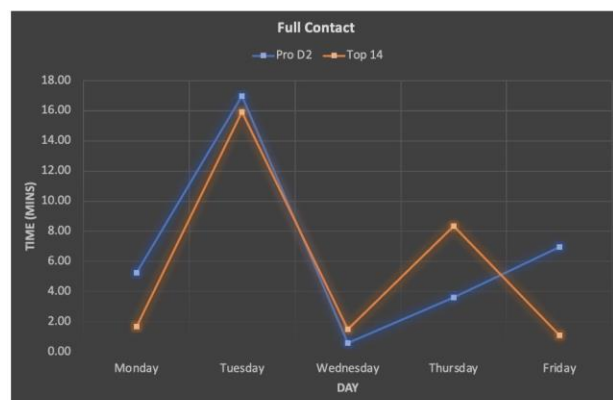
- Full contact
- Controlled contact
- Live set piece play

Average is 118 min per week, with large variation within the respondent sample

- **Full contact time** average of 21 minutes per week
- Note the large variation, from zero to 145 min per week – this may reflect different interpretations of full contact, requiring a definition for standardization purposes

Characteristic patterns of contact load during a week

Top 14 and Pro D2



Within competitions where more than 30 responses were received, the patterns of contact load were explored

The figures to the left show the contact load in minutes for Controlled Contact (top panel) and Full Contact (bottom panel) in the French competitions, Top 14 and Pro D2

A characteristic pattern is evident, where peak contact load occurs on Tuesdays, with a second peak on Thursdays, and very low contact volumes on Mondays, Wednesdays and Fridays

This pattern was also evident in other European competitions and the Currie Cup (SA)

Characteristic patterns of contact load during a week

Super NZ and Super AU



In contrast, there was a notable difference in contact load pattern in the Super Rugby competitions of NZL and AUS, as shown on the left

The peak contact day was on Thursdays, with the second contact day the Tuesday

As was the case for European and SA competition, Mondays, Wednesdays and Fridays had very low reported contact load of any kind



A common feature of both these patterns is the double-peak, with the remaining three days per week displaying very low contact load volumes.

Summary and key findings

The expert working group considered the survey findings and recognized the following key findings, which would inform the subsequent contact load guidelines:

- There was a large range in responses to all categories of contact load – Full Contact, Controlled Contact and Live Set Piece play. This range was from zero to a maximum of 540 minutes of total contact per week, for example, or 145 minutes of Full Contact per week
- This wide range reveals both a variety of practices in the elite game, and also a significant divergence in how players interpret and report on categories of contact. This necessitates the clarification of definitions to improve understanding and consistent reporting
- Players from the top tier competitions generally reported lower contact volumes than those from second-tier competitions
- The top tier elite competitions show a comparatively narrower range of weekly contact load, with average loads of:
 - 40 min of live set piece play per week
 - 40 min of controlled contact training per week
 - 20 min of full contact training per week
- Characteristics patterns were observed in top tier competition. The patterns can be broadly categorized into one of two groups:
 - A peak of contact on Tuesdays, with Thursdays the second significant load day
 - A peak of contact on Thursdays, with Tuesdays the second significant load day
- Common to both patterns is a two-day per week peak, with very little load applied on the other three days a week
- The expert working group recognize that these patterns inform important best practice principles that may guide contact load management
- The practices employed by teams in the top level elite competitions were identified as complying with best practice recommendations from coaches and conditioning experts in the expert working group, and the survey results thus inform the contact load guidelines, along with previous research on load and injury surveillance studies that have characterized injury risk during training