

## Returning to Contact from Inactivity

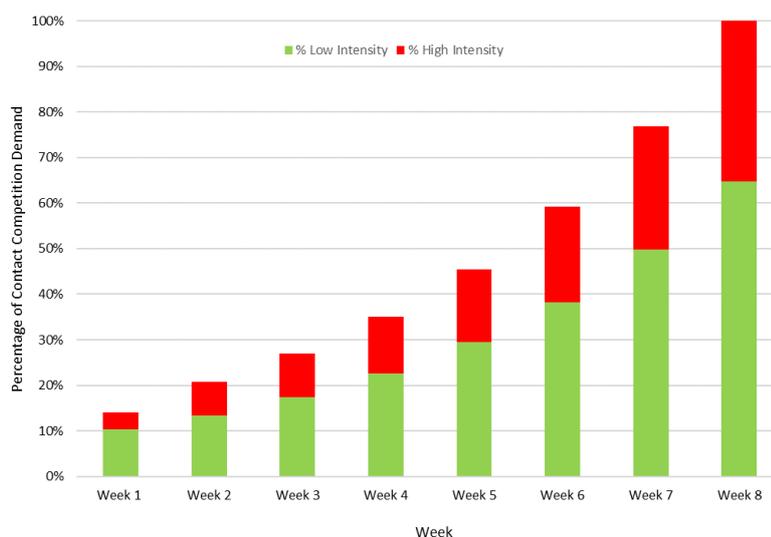
The **Protecht** system generates real time head impact data for each player on a team using the system simultaneously. It important to both measure and ensure compliance with the intensity of impacts required for safer return to contact play. Critically it therefore allows coaches / practitioners to accurately monitor not only what is happening to their players at any moment but view both the seen and unseen, planned and unplanned impacts and to make any adjustments to drills in training required to ensure the minimum risk of injury is maintained when returning back to contact competition demands.

To optimally prepare for competition levels, firstly competition demands must been known, then athletes need to gradually increase their workloads so that their fitness (chronic workload) is sufficient to overcome acute fatigue demands [1]. Longer breaks in training and greater decreases in volume and intensity require a longer progressive return to full training to negate the risk of injury [2] such as players returning from injury or inactivity. Returning players to contact has particular relevance in rugby's current climate where the COVID-19 pandemic has spread worldwide in early 2020, resulting in forced interruption of competition and training. During enforced COVID-19 home confinement, athletes are likely exposed to some level of detraining (i.e. the partial or complete loss of training-induced morphological and physiological adaptations), as a consequence of insufficient and/or inappropriate training stimuli [3]. During this period athletes will most likely be provided skills and running but not a contact stimulus. For the majority of the athletes this will be the longest period they have gone without contact exposure which may be initially beneficial in terms of recovery but also heightens the risk of injury from contact load upon re-introduction, if the appropriate sport-specific reconditioning cannot be granted within an appropriate time frame [2,3].

If the contact demands are known and the athlete has an appropriate time frame to return to competition, a specific graded return can now be planned for a player returning from injury. Figure 1 below outlines an example of a contact graded return for an injured player over an 8 week period by percentage competition contact load measured via the PROTECHT system. What can be seen is a linear progression of weekly training contact load by 130% until the player has achieved 100% of their contact competition demand. This contact loading scheme was used to ensure that the load was progressed within the required time frame, as a lower loading limit such as 110% would result in a much longer graded return to competition, in addition to reducing the



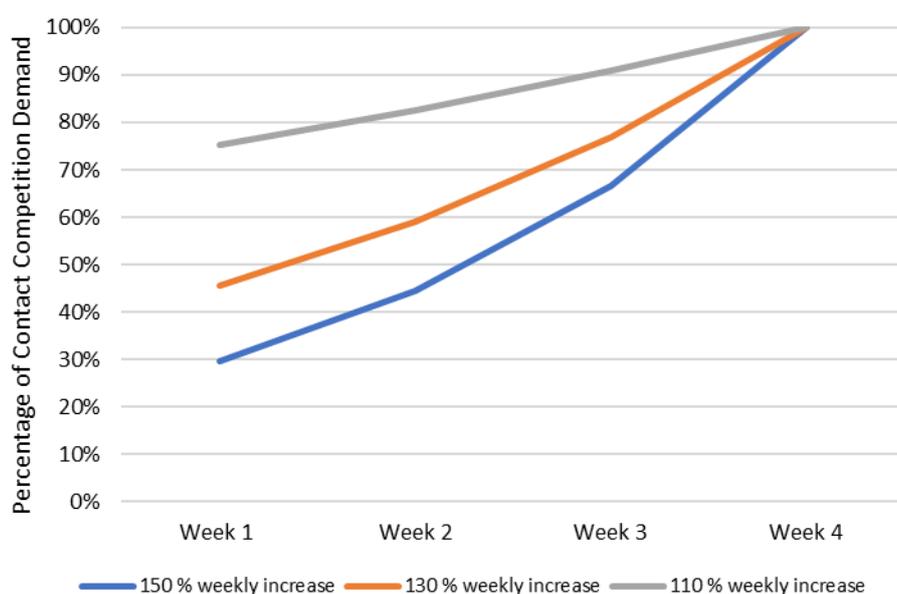
increased risk of re-injury associated with an aggressive upper limit loading scheme found with using 150% [4]. Though there is a linear progression in load over this 8 week period, within these weeks training should be prescribed in a way that weekly monotony is low as a result of daily variation of loading and unloading days to fatigue the player and allow the player to recover as outlined in a tactical periodization approach for rugby union [5] to ensure that the strain placed upon the player is reduced [6,7].



**Figure 1:** 8 week graded return to contact competition demand from injury.

If an appropriate time frame cannot be granted for returning players, in order to negate this risk upon restart of training, previous research has emphasized that during periods of inactivity, if lower levels of chronic or residual volume are maintained progression back to normal training and competition levels are accelerated, when compared to those that did not maintain residual volume [2]. What can be observed in Figure 2 below is the contact training load at each accelerated progression level and the rate at which they return back to normal training and competition. What is apparent is that progressing weekly contact load via the upper limit (150%) requires a much lower starting residual level (29%), as they progress the contact load at a greater rate when compared to progressing using lower limits (110% and 130%) which require higher starting residual levels (i.e. 45% and 75%). Though there may be advantages to using a loading strategy that is quicker, the associated risk of injury and impaired performance is much higher [2,4]. It is therefore, the responsibility of all staff supporting the player to ensure that the progression of load is appropriately planned to safely achieve the levels required for performance [2].

If only 4 weeks of training is provided to clubs to return players back to competition following inactivity, practitioners should ensure that players are prescribed with a form of contact training in order to achieve a level residual contact volume throughout the break. For example, conditioning which entails both external running load and contact load like down ups, pad work or judo rolling will ensure an accumulation of volume and build a certain level of residual volume prior to commencing training. Though not an ideal contact training competition stimuli it would still provide some elements of light contact load that the player could be exposed to, enabling a reduction in the time required to reload players to normal competition levels safely.



**Figure 2:** 4 week progressions of total contact load by 110%, 130% and 150%.

For further information contact [chris.jones@swa.one](mailto:chris.jones@swa.one) or visit our website at <https://swa.one/>

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