



World Rowing

Covid-19 Pandemic

Return to Full Rowing Training and Avoiding Risk of Injury

Final at 10 June 2020

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Acknowledgements: Thank you to Mick Drew (Australian Institute of Sport) and Keith Stokes (University of Bath) for advice and information.

Many rowing nations have now moved through the peak phase of the Covid-19 pandemic to the phase where they can consider returning to normal sports activities. This will be a period of optimism, as the chance to engage in normal rowing training, and eventually racing, becomes possible. Most nations were subject to a period of 'lockdown', with no opportunity for on-water rowing, and limited training opportunities beyond individuals' home environments. Following advice from FISA and local public health guidelines, rowing clubs are opening and boats are returning to the water. In our enthusiasm to return to normal life, attention needs to be given to the risk of sustaining an injury in this period.

Recent years have seen progression in our understanding of risk of injury in sport. A consistent observation across all sports is that the risk of sustaining an injury is increased by both poorly managed training and competition loads across a season, and also by exposing an athlete to a rapid increase or change in load.¹ In rowing, the 'load' would include a variety of modes, such as ergometer, strength programmes and on-water training. The basic principle of training is to use load to stimulate a biological response in the tissues of the body. This response leads to physiological adaptations resulting in improvements in areas such as cardiovascular fitness and strength. It is important that the body is given enough recovery time to be able to create adaptation to the training load. A cycle of response, recovery and adaptation forms the basis of any training programme. This will be specific for each athlete, as the capacity to respond and recover is different for everyone.

In rowing, injury occurs when there is cumulative loading, with inadequate recovery and ongoing fatigue. The body is unable to cope with the load and the adaptation cannot take place adequately. Research² has shown that there are times in the rowing year when injury is more likely to occur. These are a few weeks after return to training following a break (restarting after time off at the end of the season); and at the transition to the sprint (regatta) season. Both low back pain and rib stress injuries have common onset patterns during these times. These are conditions that can take a long time to recover. Rowers often return from a break and engage in a dramatic increase in training volume. They seem to be able to cope with this for a few weeks, even with inadequate recovery, but too sharp an increase in load is a known risk factor for injury, so some inevitably succumb.

A graduated change in training load makes adaptation more feasible and less likely to cause injury. The arrival of the pandemic caused a significant change in everyone's lives, and for many rowers, the ability to train was curtailed, with no water training at all. We have very little experience with how this will influence risk of injury. Current data are only modelled around relatively short absences or reductions in training, and we know that even those increase injury risk. A much-quoted study³ reviewed the effects of a three-month enforced lay off for athletes in the National Football League (NFL) in 2011, due to contract disputes. Return to play was associated with a four-fold increase in Achilles tendon ruptures in players in the first 29 days of return to competition, compared to other seasons. Over the rest of the season, other injury rates were also higher than other seasons.

Most competitive rowers will have used their time during lockdown to try to maintain some level of fitness. This is likely to be far from a normal training programme. One of the effects of a lockdown is an inevitable reduction in 'none exercise physical activity' or NEPA. This means that while rowers might have been engaging in good ergometer or running sessions on a regular basis, to try to maintain training load, their general levels of activity and moving around during the day have been significantly reduced. So overall load was much lower than normal. One of the greatest issues will be maintaining strength. Research tells us that skeletal muscle is very vulnerable to deconditioning when not used, with changes seen in as little as one week of inactivity.⁴ Strength can decline by 1.5-2%/day when subjected to extreme disuse (such as complete bed rest)⁵ and while rowers are unlikely to experience such a dramatic response, it is worth noting that muscles decondition more rapidly in those who are highly trained already.⁶ A study that examined the effect of five weeks of reduced training (two endurance and one

strength sessions/week) in kayakers following the world championships, found a reduction of 6% in VO₂max, 4% in bench press and 3% in bench pull. There was double the reduction in those who did no training.⁷ Strength and endurance of the skeletal muscles protects from injury. We also know that detraining can cause impairments in tendon and ligament strength reducing their ability to tolerate load and risking injury. This supports the role of strength and endurance training, in re-establishing baseline fitness to build to previous levels of training in rowers. Many rowers will have used their time to engage in large volumes of ergometer training. It should be noted that there are significant differences in biomechanics between ergometer and water training, and high levels of preparedness on the ergometer cannot be assumed to protect rowers from injury when returning to other training modes.

Reduction in protective strength, reduced intensity and volume of training, reduced technical skill and decreased tolerance to activities such as sprinting have been imposed on most rowers and are all associated with injury risk. So, what can be done to mitigate risk as rowers return? Coaches will have an important role in this, but rowers also need to take personal responsibility. Research tells us that avoiding an increase in training volume of more than 10% per week can reduce injury risk.¹ An updated position statement from the Australian Institute of Sport (AIS) states that the time to return to a full training load is proportionate to the length of the reduced workload period, and the amount of training completed during this period.⁸ They emphasize that there is no specific formula for return to training prescription which will apply to all athletes, as context will be different for everyone. Factors to consider are previous training history, health factors (physical and mental), current skill levels, athlete age and individual factors such as upcoming key competition dates.⁸ For example, many rowers will have been off the water for 8 weeks; those who were able to complete 60% of their normal training volume during this time will be able to return to full training volume in a shorter period than those who completed 40%. However, there is no formula which will encompass all the factors which will influence progression, and each case needs to be considered individually. It may make sense then to initially train at a lower volume than usual, with greater recovery sessions, customizing training for individual athletes whenever possible. There should be a focus on restoring technical skill in the boat with the addition of formalized resistance training as soon as it is feasible.⁶

Training load (and response) should be monitored by measuring discrete variables, such as length and intensity of sessions (external load measures) and subjective measures such as rate of perceived exertion (internal load measures). Adequate recovery should be factored in to include aspects such as sleep and nutrition with vitamin D supplementation where appropriate.⁹ There is no single good marker to measure the rower's response to load, so multiple methods should be considered.¹ Rowers are likely to develop new blisters on their hands and other areas due to altered friction patterns, and special care should be given to avoiding infection. The rush to compete (especially for selection) should be avoided. It is unlikely that any rower can 'catch up' on the season and those organizing competitions should consider this. Likewise, applying pressure on a rower to perform on testing at an early stage is not recommended. Individuals will have responded to the absence of consistent training differently, so it is likely this immediate testing information will not be a reliable measure of potential.

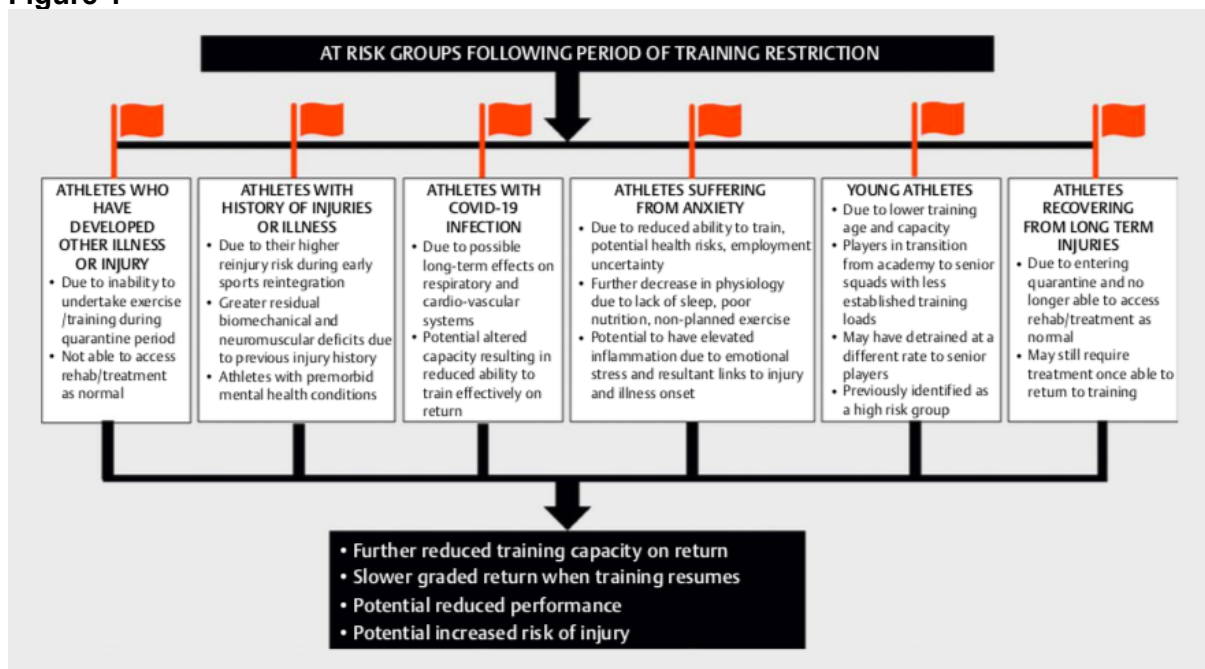
If an athlete has been ill with Covid-19 or has any symptoms related to Covid-19, they should not return to training without medical advice.¹⁰ FISA Sports Medicine Commission has published a guideline on return to training risk assessment.¹¹ Key considerations for injury avoidance are summarised below in Table 1.

Table 1

Key considerations in returning to training and avoiding injury
Risk of injury is associated with a sharp increase in training and racing load with inadequate recovery
Return to full training should be gradual and individually tailored according to the amount and type of training completed during lockdown
Avoid increases in training volume of more than 10% per week and factor in greater recovery times initially
Ergometer rowing has key biomechanical differences to on-water rowing and so can only provide limited preparation for return to the boat
Return to strength training should be prioritized to address deficits early, and build protective strength and endurance
Return to on-water rowing should focus on technical drills to address deficits associated with extended practice loss
Focus should be on restoring conditioning. Competition should be avoided until restoration is achieved. Trying to 'catch up' on a season should be avoided

Other vulnerable rowers include junior athletes and those who have already sustained an injury. Useful advice is given in Figure 1.

Figure 1



Ref: Stokes KA, Jones B, Bennett M (2020). Return to play after prolonged training restrictions in professional collision sports. *International Journal of Sports Medicine*, doi: 10.1055/a-1180-3692 (reproduced with permission)

Finally, we know that psychological stressors increase athletes' risk of all injuries. Recent months have been associated with a multitude of stressful issues for all. This should not be underestimated. The initial focus should be targeted on improving strength and conditioning, rather than on pressure to perform. This will allow a good baseline to be achieved, after which a more regular programme can commence.

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