

Using Mental Skills for Exercise Rehabilitation of a Masters Athlete

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Lori is a 69 year old female sprinter who regularly competes in her age group in 60m, 100m and 200m track regionally, nationally, and internationally such as at the World Athletics Masters Championships. Prior to January 2022 Lori had not competed since January 2020, due to the cancellation of two years' worth of amateur athletics events in the United Kingdom due to the pandemic. By October 2021 Lori was keen to make a return to competition and had increased her training volume in the run up to a 60m indoors competition planned for the end of January 2022, when she sustained a mild to moderate hamstring strain in November 2021. This was the injury she originally came to see me for in 2016. We had successfully resolved it and had since then worked with her on strength & conditioning, with no further recurrences of this injury.

Acute hamstring strains are the most commonly reported musculoskeletal injury in track and field competitions accounting for 24.1% of all injuries sustained according to Otsuka et al. (2022) and the authors showed that in young athletes a mild to moderate strain can take from two to seven weeks until the athlete is able to sprint again.

During Covid restrictions Lori maintained a home strength & conditioning program, which was less intense than it would have been in a gym due to lack of equipment. Her injury required rest from any sprinting activities for at least three weeks, whilst working on exercise rehabilitation and strength. More significantly, the injury put a question mark over her first competitive race after COVID-19 restrictions had been lifted. She had lost two years of racing, between the age of 66-68, hence there was an initial feeling of frustration post injury.

Lori is a highly active, fit, healthy, masters athlete. Whilst officially retired from teaching she remains active as a consultant for a teacher's union and she travels, attends sports events as a spectator and she reads extensively. Whilst sport is a big part of her life, she has many other

interests that she shares with her partner. She is organized in her training approach and fully committed to her goals, however her other interests outside the sport mean that she remains very much grounded and has a healthy athletic identity. Her normal training week includes three coached and/or solo track training sessions and two strength & conditioning sessions.

This paper investigates the use of the following mental skills during Lori's exercise rehabilitation, goal setting, relaxation techniques and imagery. Lori represents a growing, but under researched demographic of athletes, the masters athlete. There are not many studies available researching the use of mental skills in older athletes. Makepeace et al.'s (2021) study showed that masters athletes saw goal setting as of prime importance and they emphasized that imagery benefitted them amongst other things when it came to managing physical discomfort.

Goal Setting

There are many benefits to goal setting during an athlete's rehabilitation, Brinkman et al.'s (2020) critical appraisal of previous research suggests that the use of goal setting improves self-efficacy after sports related injury and according to Arvinen-Barrow & Walker (2013) it increases confidence, attitude, and appraisal/acceptance of the athlete's injury. The main reason why goal setting is suggested by Arvinen-Barrow et al. (2010) to be successful is that it has a positive effect on rehabilitation adherence as it provides the athlete with a sense of accomplishment and achievement.

Brinkman et al. (2020) also suggest that it is important to work with the patient when defining goals, rather than the therapist defining them independently, as this will likely allow patients to feel more in control of their own rehabilitation. Lori will benefit from goal setting as she is anxious about the recovery time needed and about the ability to participate in her upcoming race. She is frustrated to have sustained an injury to the hamstring which she had

previously injured, this time only a few months into rebuilding her training with the view of competing for the first time since pandemic restrictions were imposed. The goal of full recovery and racing in early 2022 initially feels impossible to her. Breaking down her goals into short (daily goals), medium (stage goals) and long term recovery goals will help her understand the entire recovery process and the timeline she is working towards. Daily goals outline what happens in each rehabilitation session and stage goals will help break down the recovery goal. This staging of her rehabilitation goals will help her remain motivated and ensure her adherence to rehabilitation in and outside her physiotherapy sessions. The SMARTER approach to goal setting will help Lori as we will be able to evaluate how she is progressing through her rehabilitation, with all her goals being specific and measurable, challenging yet achievable and realistic.

Goal setting can easily be implemented without overwhelming time commitment and made an integral part of the physical rehabilitation process (Berengui et al., 2021), which is important for Lori as she has both family and work commitment outside her athletic activities.

Relaxation Techniques

Relaxation techniques can benefit Lori for a variety of reasons one of which is that we can use breathing techniques, i.e., diaphragmatic breathing, in conjunction with other mental skills such as imagery and self-talk to enhance their effect (Arvinen-Barrow & Walker, 2013). The three areas that benefit most from the use of relaxation techniques during rehabilitation are the ability to deal with pain, to reduce stress and anxiety, and to increase an athlete's focus and self-confidence (Arvinen-Barrow & Walker, 2013). Additionally, Ivarsson et al. (2015) suggest that mindfulness also reduces injury risk. Being aware of this will be helpful for Lori as she

moves further along in the rehabilitation process, as it may reduce the anxiety over sustaining a further hamstring injury once she is able to return to training on the track.

Stress and anxiety over a loss of fitness, over not being able to return to previous competition performance, and losing more time than she already has due to the pandemic, as well as fear of re-injury are all emotions that Lori is experiencing in different phases of her rehabilitation. Relaxation techniques have been shown to reduce stress and anxiety. Hunt et al. (2018) for example described the physiological and psychological changes that diaphragmatic breathing may support such as increased self-reported relaxation, lower heart rate and higher heart rate variability and reduced perceived levels of stress.

Additionally, Bagheri et al.'s (2020) randomized controlled trial investigates the use of mindfulness in the rehabilitation of recreational runners with knee pain and showed that mindfulness techniques such as breathing meditation led to decreased pain intensity, and increased coping strategies in dealing with pain and also a decrease in fear of re-injury. Therefore, breathing and mindfulness techniques would help Lori throughout the three phases of rehabilitation from pain reduction, to decreased anxiety and worry over re-injury.

Imagery

Imagery is a powerful tool both for performance enhancement and during rehabilitation, that can be used for different effects throughout the three rehabilitation phases. Imagery is described as cognitively reproducing or visualizing an object, scene, or sensation as if it was occurring in physical reality (Arvinen-Barrow & Walker, 2013).

Imagery during rehabilitation serves motivational, cognitive, and healing functions, this means that imagery can facilitate the process of physical healing, assist the athlete in coping with

pain, increase motivation for adherence to a rehabilitation program and it can help maintain sport specific skills (Arvinen-Barrow & Walker, 2013).

Rodriguez et al.'s (2019) review of studies suggests that imagery is an effective intervention in reducing the fear of reinjury and also assist with the reduction of anxiety, pain and tension whilst promoting healing. Using healing imagery, such as visualizing repair of the strained hamstring and imagining dialing down the pain could therefore be a powerful intervention for Lori. It may help reduce pain and anxiety over the injury and what it might mean for her upcoming season, as she will feel more in control of the rehabilitation program. Furthermore, Cressman and Dawson (2011) suggest that healing imagery reduces stress and frustration caused from the injury and overall leads to more positive associations with the rehabilitation process.

Lori competes in a sport that requires strength and power first and foremost to create speed on the track. Performance imagery according to Slimani et al. (2016) is clearly evidenced to have a positive effect on functional strength performance in both healthy subjects and injured individuals. Using imagery during rehabilitation and when returning to sport can help Lori to imagine successfully performing rehabilitation exercises and track specific movement such as starting from the blocks in her mind's eye. Aside from improving strength in real life this can also help her feel more confident that she will be able to sprint again and not fear re-injury. As Lori is a masters athlete imagery may also be helpful in improving technique and strength without putting constant training stress on her body (Makepeace et al., 2021).

The Three Phases of Rehabilitation

Physical rehabilitation is divided into three parts. Phase I is the initial reaction to injury, both physically and psychologically. Physically the athlete is in pain and may have become

inactive due to the injury. The athlete also cognitively appraises their injury either positively or negatively and they may experience anxiety or negative emotions (Arvinen-Barrow & Walker, 2013). Phase II is the reaction to rehabilitation phase. This is usually the longest phase and adherence to and compliance with the rehabilitation program are important components of this phase (Arvinen-Barrow & Walker, 2013). Phase II is also characterized by the physical factors of strength, balance, and mobility. Phase III is the reaction to return to play phase. In this phase physically there is a return to sport-specific agility drills and movements. Psychologically in this phase athletes may encounter fear of re-injury and self-confidence issues as they prepare to return to sport (Arvinen-Barrow & Walker, 2013).

Phase I

Lori's initial appraisal post-injury is a sense of frustration about sustaining a hamstring strain just after she had upped her training volume with the view of returning to competition after a two year enforced break. She is initially anxious about the recovery process as she remembers how long it took for her to return to full training and competition when she sustained her first hamstring injury in 2016. The pain keeps her away from track training and she is reduced to a more limited activity such as walking only.

Goal setting will be an important component during this phase of Lori's rehabilitation. Understanding her injury and its severity will be part of this, hence patient education is important early on. Her injury is less severe than in 2016 and therefore the projected return to full training will be shorter, this knowledge will help reduce Lori's anxiety around her return to sport. Goal setting in this phase is likely to be broader in scope (Arvinen-Barrow & Walker, 2013) so that she can understand the overall process of rehabilitation.

Imagery, especially healing imagery, and imagery to dial down her pain can be a powerful tool at this stage as it can build her confidence in her body and she will feel in control of the pain and healing of her body and this can contribute to reducing her initial anxiety about her injury.

Finally deep breathing exercises (diaphragmatic breathing) in this early stage can be used to reduce anxiety and it can be used together with imagery to reduce pain, imagining that she is physically breathing out the pain (Arvinen-Barrow & Walker, 2013).

Phase II

Setting process, performance, and outcome goals during the second phase of rehabilitation will be key to allow Lori to see the step by step progress she is making during phase II, with her goals being re-evaluated regularly. Goal setting will maintain Lori's motivation throughout this lengthy rehabilitation stage and improved motivation should have a positive effect on her adherence to the rehabilitation program.

Healing imagery can continue to be used in this phase as Lori can imagine her hamstring becoming stronger and more resilient. Additionally, imagery can be used to rehearse successful completion of rehabilitation exercises before the actual rehabilitation session (Arvinen-Barrow & Walker, 2013). According to Williams & Krane (2014) imagining movements can create neural pathways and stimulate nerve endings resulting in the brain using those pathways and ultimately potentially decreasing recovery time both physically and mentally.

Lori should continue using breathing techniques during this stage both in tandem with imagery and on its own to allow her to manage any cognitive anxiety especially around the length of time it may take her to return to full track training and the uncertainty of returning to indoor competition in time.

Phase III

Goal setting in the return to play phase can be used to manage expectation concerning Lori's return to full training and also her upcoming competition. Previous competition goals will have to be re-evaluated and adjusted. This will allow her to not apply too much stress too early on her return to the track.

Lori will be able to use the imagery skills she has learnt during rehabilitation to now apply to her return to full training and competition. Rich, vivid images of her performance during training and competition can allay anxiety about re-injury and build her confidence. Combining imagery pre-practice and pre-competition with self-talk can also be used during this phase (Arvinen-Barrow & Walker, 2013).

Finally, the relaxation techniques, such as diaphragmatic breathing, Lori learnt in phase I and II of rehabilitation can also be applied when returning to training and racing to reduce fear of re-injury and to help her manage her arousal levels prior to her first track session and her first race back to ensure she can find her individual zone of optimal functioning (IZOF).

Conclusion

Having developed and improved her already existing mental skills, Lori had a successful return to full training and she was able to participate in her race as planned in January. The goals for the first race back were scaled back and she used it as a race to practice some newly acquired mental skills such as managing arousal levels and using pre-race imagery. Weaving together the physical and psychological rehabilitation successfully meant that after the initial negative emotions Lori experienced, she felt motivated and had a much more positive experience and outlook throughout her injury rehabilitation.

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