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Return to Sport Foot and Ankle

 Ankle injuries are one of the leading musculoskeletal injuries suffered among all athletes and active individuals. There are multiple types of foot and ankle injuries in which an individual can endure including some of the more common ones: ankle sprains, syndesmosis injuries, stress fractures, fractures, Achilles injuries and plantar fasciitis. Of these ankle injuries, the most commonly suffered throughout sport and activity is the lateral ankle sprain. Ankle sprains are the most common injury in sport.1 They account for approximately ten percent of all emergency room visits.2 The number of ankle sprain injuries has been significantly increasing over the last 30 years due to increase in recreational activities and sports among individuals of all ages.3 This injury alone costs an excess of 1.1 billion dollars in charges from emergency departments in the United States.4 Not only are they common and costly, they also often have negative, lasting affects following initial injury. Lateral ankle sprains are among the highest in reoccurrence rates of musculoskeletal injuries.5 It is reported anywhere from 19 to 72 percent of those who have suffered a lateral ankle sprain with suffer another.6 It is also reported that at least 40% of those with ankle injuries with develop Chronic Ankle Instability (CAI).7 CAI causes feelings of giving way or instability in the ankle, persistent weakness, pain with activity, repeated ankle sprains, and self-reported disability.8 It is important to recognize the increased prevalence of ankle injuries, their prolonged effects and significant potential of reinjury in athletes and individuals.

 There is currently no well agreed upon, established, functional testing criteria for those with foot and ankle injuries returning to sport. Unlike Anterior Cruciate Ligament Reconstruction where the return to sport functional testing is better established and implemented, there is a lack of consensus with foot and ankle. This paper will outline what is currently in the literature given four articles on functional testing with return to sport and their clinical implementations. These will include articles by Ritchie and Izadi9, Clanton et al10, Wikstrom et al11, and Tassignon et al12.

 The first article by Ritchie and Izadi9 discusses return to play criteria with functional testing as well as additional domains. This is written from the perspective of a podiatrist. They described a number of areas to be addressed for an individual returning to play. The first is a self-reported outcome measure. They used Sports Ankle Rating System, Functional Ankle Disability Index, Foot and Ankle Ability Measure, Lower Extremity Functional Score.9 Along with an outcome measure, they reported using manual tests for stability as an important factor. These included the Anterior Drawer as well as the Talar Tilt.9 For their functional testing, they included numerous tests. They first had single leg hoping for distance, side hop, and up/down hop. Additionally, they included a shuttle run for agility.9 They also included balance testing. For static balance they chose Modified Romberg with eyes closed.9 For dynamic balance they chose the Star Excursion Balance Test.9 For a range of motion test, they included the Heel Rocker Test.9 An interesting addition to the Ritchie and Izadi criteria was orthoses and bracing.9 For orthoses, they state there are positive effects for individuals to use orthoses following sprains.9 They also reported there was no difference whether the individual used custom or prefabricated orthoses.9 Another interesting statement made in this article was in regard to bracing. Ritchie and Izadi state bracing is mandatory in the treatment of ankle sprains when an athlete is returning to play.9 They report sufficient evidence supporting prophylactic ankle bracing in athletes as they return to play following their injury.9 This is a current set of criteria used to return athletes to play in the literature set forth by Ritchie and Izadi.

 Clanton et al10 have a differing set of functional testing and criteria for return to sport following lateral ankle sprain. Clanton et al state there are four domains in which functional testing needs to occur: range of motion, balance and proprioception, agility, and strength.10 For range of motion, they include the Dorsiflexion Lunge test.10 For balance and proprioception, the Start Excursion Balance Test.10 As far as agility, they used the Agility T-Test.10 Finally, for strength, they included the vertical jump test.10 Clanton et al also included an additional domain to account for psychological factors. They report that up to 19% of athlete experience increase psychological stress following an injury.10 This can actually increase their risk of reinjury due to their fear, anxiety, and lack of confidence in themselves and their body following this injury. As far as specific testing, they included the Trait Sport Confidence Inventory.10 This is an additional set of performance-based tests for return to sport following an ankle injury within the current literature.

 An additional article by Wikstrom et al11 looks at differing criterion and the agreement between their testing. These each reported multiple domains. These included: pain/swelling, ROM, strength, static and dynamic balance, running, sport-specific movements, and patient reported outcomes.11 They overall found only some partial agreement at best on some specific testing with no consistency across others.11 This shows the lack of consensus across functional testing with no agreement among tests. For hop testing, there was partial agreement across all articles for this being a category to be tested. However, there was little consistency for which test specific testing should be used to do so.11 In regard to static balance, this was also partially agreed upon as a component to test.11 The most recommended test was single leg balance.11 Dynamic balance, was only tested in a a minority of papers, not checked in most.11 For those that did include it as part of their criteria, the Star Excursion Balance Test was used.11 For pain and swelling, there was also partial agreement to be tested.11 There were no specifics given nor any consistency within the section of how to go about the testing and which ones to use.11 With range of motion and strength there was no consistency or specifics given.11 There was only partial agreement on subjective measures and no specifics given.11 Throughout all of these domains of testing, only two papers expressed a threshold of 80% to the contralateral limb for clearance.11 This article illustrates the large gap present in the literature in regard to the lack of agreement of which is the best protocol to use when returning an athlete to sport and the need for further research.

 The last article discussing return to play criteria was by Tassignon et al.12 This was an interesting systematic review that discussed not only various criteria present and different categories in which to get an athlete back to sport, but also areas needed for further research. The first category discussed was clinical assessment.12 Within clinical assessment, it included swelling, ligamentous laxity and range of motion.12 Within the performance testing category, they included: proprioception, hopping and jumping, range of motion, balance, agility/speed and strength.12 These were the areas in which they stated should be addressed given their review. There were not specific tests discussed during this article, just the areas which should be addressed and tested before returning the athlete or individual.

An interesting aspect Tassignon et al brought up was currently a majority of evidence for return to sport following ankle sprain has to do with time-based protocols rather than performance based. They suggest moving against time-based as the data they are going off of for ligamentous healing is not consistent with what is actually happening in the ankle.12 They state that further areas of research are needed to better create functional testing criteria to more accurately return athletes and individuals to play with as minimized risk of reinjury as possible.12 These areas of future research needed are that of sports specific movements to better allow athletes to test movements more tailored to them.12 They also state that sensorimotor deficits are present following the injury and may persist so significant balance testing is needed before athletes return; static, dynamic, and reactive.12 They also support testing for psychological factors such as fear avoidance, taking this into account for reinjury.12

 An additional aspect the Tassignon et al article discusses is the varying levels in which individuals are returning and how they differ. The first is Return to Participation.12 They describe this as the individual participating in rehab and training, but at a lower level than their Return to Sport goal.12 They are being physically active, may be participating in low level practice activities, but are not yet ready to fully Return to Sport. Next is Return to Sport.12 In this level, the athlete has returned to their sport, however they are not performing at the level in which they were prior to their injury.12 This was interesting as we often focus so hard on getting athletes to this stage, however we cannot forget this isn’t returning to what they were; there’s more work left to do. This is the Return to Performance level.12 The individual has successfully returned to sport and is thriving. They are now performing at their pre-injury level. This is something important to keep in mind with rehabbing and clearing individuals back to sport; that’s not the end goal, performance is.12 Making this evident to the individuals themselves that they will not be back to pre-injury level right away when cleared to return to sport is important for their expectations and for ours with testing.

 Returning an athlete to sport following a foot or ankle injury is a multidimensional process in which many factors need to be addressed to ensure the athlete or individual has the best outcome they possibly can. Implementing functional testing to obtain objective measures along with clinical experience and subjective data can help allow the best outcomes for the patient, reducing the rate of reinjury. Developing an appropriate criterion to best evaluate this is an important step in the process. The lack of consensus in the current literature shows a need for future research to aid in determining this protocol and prevent future recurrent foot and ankle injuries in athletes and individuals returning to sport and activities.

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