

## **BEST PRACTICES**

# TACKLING SOCCER INJURIES

INJURY ANALYSIS, RISK FACTORS AND RISK MANAGEMENT STRATEGIES

## SOCCER INJURY INCIDENCE

Soccer is a high demand sport involving continually changing complex movement patterns, which presents a wide variety of musculoskeletal injury risk factors. Walking, running, and sprinting, sudden changes in direction, jumping, and body contact require a high grade of coordination and body control. Injuries are on the rise in soccer - for example, over the past 5 years the number of injuries in the English Premier League increased by 19%. In 2014-2015, Teams spent an estimated f198,000,000 on injured players, a f51,000,000 increase in just 5 years.

## HAMSTRING INJURY & SCREENING

Hamstring strains dominate the list of frequent injuries. **There has been a 16% increase in incidence over the last 5 years and they now account for 62% of all muscle injuries.** Re-injury, maladapted movement due to the formation of scar tissue and altered neural feedback places players who have sustained a previous hamstring injury at increased risk of ACL, hip, groin and other lower limb injuries.

Dominant limbs sustain more force through joints and muscles. Dominant limb hamstrings are more susceptible to injury. Thus, if there is a substantial strength asymmetry between dominant and non-dominant hamstrings, recurrence of injury is more likely. In addition, increased chronological and training age place players at additional risk of sustaining a hamstring injury.



Hamstring injuries typically occur during eccentric loading phase of high speed running.

The ability to control eccentric hamstring load can attenuate risk of injury during high speed activity. The 'pre-load' and 'landing' phase of CMJ measures eccentric hamstring function during a functional, dynamic weight bearing activity. It's advisable to include CMJ in regular screenings. Watch the video to learn more: https://www.youtube.com/watch?v=zAjvyxdRBiU.



Previously released Kitman Labs research has highlighted a number of risk factors directly linked to hamstring injury <u>http://www.kitmanlabs.com/knowledge/practices-for-preventing-hamstring-injuries&type=&tag</u>. Of note in this research, 70% of the injuries exhibit a change in both well-being and musculoskeletal variables.

#### **GROIN INJURY & SCREENING**

Groin injury is present in 14-35% of the general population but **groin injury is much more common in professional soccer players (72%)** and can lead to osteoarthritis.

The evidence-base supports the measurement of pressure and muscular activation in supine lying using a 45-degree angle of hip flexion. This can be easily achieved as part of a regular screening routine using a blood pressure sphygmomanometer. The data taken from simple screens such as this can be powerful indicators of injury risk when compared to the player's 'norm' or as part of a multivariate risk analysis.

In addition, hip mobility changes have been noted bilaterally prior to groin injury - it is yet to be established whether the occurrence of bilateral adaptation is due to neuromuscular activation issues that impact groin function bilaterally or due to compensatory mechanisms.

Regularly tracking hip mobility using a motion capture movement screen can identify changes prior to groin (and lower limb) injury occurrence. Markerless screening technology makes this regular tracking simple, fast and easy for players and staff.

### FOOT/ANKLE INJURY & SCREENING

Studies have reported that ankle injuries are twice as prevalent in soccer players than in other sporting populations. Ankle injuries in soccer typically occur at varying degrees of plantar flexion. Chronic instability can be caused by impairment of ankle ligaments or proprioception deficits.

Ankle tendons are also prone to injury. The risk of achilles tendon rupture increases with training intensity and training load. Interestingly, the risk of tendon rupture is three times higher before than during competition season.

Anterior ankle impingement syndrome, more commonly known as soccer ankle, results from osteophyte formation on the anterior ankle joint. Soccer ankle is characterised by anterior ankle pain with reduced and painful dorsiflexion, catching, and subjective feelings of giving way.

Collecting subjective player feedback and performing muscle/joint functional tests are important to identify early warning signals of any of these ankle injuries.



Smartphone and kiosk approaches to collecting athlete well-being data simplify the process of collecting and analyzing soreness, sleep, hydration, RPE and other variables.



One such functional test is Ankle Dorsiflexion. Ankle dorsiflexion is an expedient and valid test of athletes' ankle joint function.

This can be done as an isolated movement or as part of a more complex dynamic movement screen such as an overhead squat.

Tracking dorsiflexion can indicate the presence of bony impingement and degradation of ligaments or tendons.



## SPORTS SCIENCE AND TECHNOLOGY OPTIMISE PERFORMANCE AND REDUCE INJURY RISK

As more and more teams look for ways to reduce injury risk and increase their odds of winning, sport science driven systems are becoming the norm.

Best practices for evolving sports science and performance programs include:

- Combining workload with response to understand each individual athlete's daily performance and risk profile to identify any meaningful changes
- Regular screenings for indicators of hamstring, groin, ankle injuries specific measurements could include CMJ, ankle dorsiflexion, hip mobility, soreness, general well-being) from pre-season through the end of the regular season
- Statistically linking all data to injury and injury response

Teams globally are employing these best practices and seeing the results:



Fewer days lost to injury



Fewer severe injuries



Fewer season ending injuries

#### ABOUT KITMAN LABS

Kitman Labs Athlete Optimization System, combines workload, musculoskeletal, wellbeing and performance metrics to give coaches a well-rounded, holistic approach to injury risk management. With this solution you are empowered to explore your own team's and players' unique data sets to spot unique correlations and trends and develop your own injury risk and performance profiles.

Soccer, rugby, basketball, baseball and American football teams worldwide trust Kitman Labs to empower their decision making to reduce injury risk.

To learn more, visit <u>www.kitmanlabs.com</u>.

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