Background Hamstring strain injuries (HSI) are characterized by a very high recurrence rate. Despite indications from the field that deficits in strength endurance and fatigability play a role in (re-)injury, screening for these in Return To Sport (RTS) decision making is still not common and requires further investigation.

Objective To justify hamstring strength endurance and fatigability at time of RTS as potential risk factors for re-injury.

Design Observational.

Setting Academic sports rehabilitation centre.

Patients (or Participants) 13 recently injured HSI athletes (M/F; 18–35yr) competitive in sprint sports, at time of RTS, and 17 healthy population-matched controls.

Interventions (or Assessment of Risk Factors) All participants underwent a RTS test battery including clinical and functional tests. For this study, single leg hamstring bridge endurance test (SLHB) and maximal isometric hamstring strength test (MIHS) in inner, mid and outer range, using hand-held dynamometry, were investigated. MIHS was retested after a shuttle-run until exhaustion fatigue protocol. Differences between injured (INJ) and uninjured (UNINJ) limb, and differences between injured and healthy athletes (CON) were tested using Students’ t-tests and mixed model ANOVA.

Main Outcome Measurements SLHB [number of repetitions]; MIHS [Newton].

Results Concerning SLHB, injured athletes showed a clinically relevant deficit in hamstring strength endurance compared to their healthy peers, both in their injured and un-injured leg (INJ=19.0±5.0; UNINJ=18.9±5.4; CON=24.5±5.3; t=2.68; p=0.01 respectively). For MIHS, a main group effect was found for outer range (INJ=347.5±67.3; CON=394.8±63.8; F=6.1; p=0.02), revealing that isometric strength was significantly worse in the injured leg compared to healthy controls. An overall fatigability effect was found (F=7.8; p=0.01), adding to the injured athletes’ baseline deficit in MIHS performance.

Conclusions The present results indicate that hamstrings exercises are implemented in the weekly training among the majority of Danish female elite football players. The Nordic Hamstring is overall the most performed hamstring exercise in both groups. However, it remains to be elucidated how the exercise is implemented in terms of frequency and load.
Conclusions Hamstring strength endurance and fatigability were both justified as potential risk factors of re-injury and should be integral parts of future rehabilitation programmes and prognostic screening.

Background Hamstring injury incidence remains high among male soccer players. One of the reasons is low adherence for effective hamstring injury prevention programs. Insight in injury risk can contribute to better adherence for injury prevention measures. The hamstring outcome score (HaOS) might provide an insight in injury risk.

Objective To determine the relation between the HaOS and both previous and new hamstring injuries in male amateur soccer players, and to determine the prognostic value of the HaOS to predict the risk of hamstring injuries.

Setting Data was collected during a large cluster-RCT investigating a hamstring injury prevention program.

Participants 400 adult male amateur soccer players started the study.

Assessment of risk factors The participants filled in a baseline-questionnaire consisting of injury history and the HaOS. During one full competition hamstring injuries were registered prospectively.

Main outcome measurements Previous hamstring injuries, new hamstring injuries and the HaOS (total score and subdomains) were considered in this study.

Results In 356 players, a significant relation was found between the HaOS (total score and all HaOS subdomain scores) and previous and new hamstring injury (F=17.4; p<0.0001 and T=3.59, p=0.001, respectively). This indicated that more hamstring injuries during the previous season was related to lower scores on the HaOS and lower HaOS scores correspond with more new hamstring injuries. With a cut-off score of 80% on the HaOS, logistic regression models showed a probability of 11%, 18% and 28% on a new hamstring injury in players with 0, 1 or 2 previous injuries, respectively.

Conclusion The HaOS is significantly associated with both previous and new hamstring injury and might be a useful tool to provide insight in players’ hamstring injury risk when used in combination with injury history.

Background Low eccentric hamstring strength and sprinting performance are associated with hamstring injury (HI) in football; however, the off-season effects on both qualities are unknown.

Objective The aim of the study was to investigate eccentric hamstring strength and sprinting performance changes during the off-season period in football players.

Setting Prospective cohort study.

Participants Semi-professional (3rd-4th tier) and amateur (5th-8th tier) Spanish footballers.

Patients (or Participants) Male footballers (n=107) were contacted to participate. Seventy-four footballers (25±4 years, 178.0±6.6 cm, 74.9±8.1 kg) were included in final analyses.

Interventions (or Assessment of Risk Factors) Eccentric hamstring strength (Nordbord) and sprint performance (30m sprint and V-Cut test) were assessed at the beginning (May-June 2017) and end of the off-season (July-August 2017). Previous HI, age and off-season length were considered the independent variables.

Main Outcome Measurements Eccentric hamstring strength (N; N·kg⁻¹), 30m sprint (5–10m splits (s)) and change-of-direction performance (s). All outcomes were proposed before any data collection. Data was analysed using paired t-tests and linear mixed models.

Results No changes in eccentric hamstring strength were found at follow-up. Large (2%, d=0.96; p<0.001) and small (1%, d=0.46; p<0.001) decrements in performance were found for 30m sprint and 10m split time at follow-up, respectively. Previous HI, age or off-season length had no effect on any of the outcomes.

Conclusions Footballers showed no reduction in eccentric hamstring strength but impaired sprint performance after the off-season period, independent of age, previous HI and length of off-season. This may suggest the risk of sustaining a HI during the pre-season is lowered, as a result of decreased maximal