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MOVEMENT RESTRICTIONS ARE ASSOCIATED WITH POOR MOVEMENT CONTROL IN FOOTBALLERS

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Introduction and purpose

Restrictions in movement including muscle length tests are commonly found in footballers. The presence of these restrictions have not been shown to predict injury and stretching the restricted tissue has not been shown to prevent injuries. However therapists still place clinical importance on managing these restrictions. Movement control tests (Comerford & Mottram 2011) determine if a person can actively control movement at a specific site and in a particular direction. Uncontrolled Movement (UCM) is identified if a person cannot cognitively control movement, to a benchmark standard during the test. UCM has been observed in people with and without musculoskeletal pain. A link has been established between UCM and risk of injury (Roussel et al 2009 Man Ther 16:630-5). The presence of UCM may be linked to movement restrictions – the uncontrolled movement compensating for the restriction. A movement restriction is identified with a loss of passive joint range of movement or muscle extensibility, to benchmark standards. The Football Matrix is a battery of movement control tests and movement restriction tests. It identifies the site (e.g low back), direction (e.g. extension) and threshold of UCM and movement restrictions. Tests of UCM can evaluate non fatiguing, alignment and coordination impairments (low threshold) and strength and speed (high threshold). This study explores the association of UCM with movement restrictions in professional footballers.

Methods

Sixty seven professional footballers from one UK premier league football club and one Dutch football club were screened with The Football Matrix, part of The Performance Matrix™ screening system. The Football Matrix uses a series of multi-joint functionally relevant movement control tests that identify the site, direction and threshold of UCM and evaluates five movement restrictions (restriction of thoracic extension range of movement, restriction of hip flexor muscle extensibility (left and right), restriction of hamstring muscle extensibility (left and right), restriction of posterior muscles hip muscles (piriformis) (left and right), restriction of ankle dorsiflexion (gastrocnemius/soleus) (left and right). An exploratory analysis was undertaken to identify if the failure of any particular movement control test (detailed as site, direction and threshold of UCM) was associated with a given movement restriction. As numbers were low the significance level was set to 0.10, indicative of a trend worthy of further investigation. A logistic regression was undertaken for each restriction

(present or absent) with all scores (failed tests) of UCM (site, direction and threshold) as potential indicators.

Results

Anthropometric data: mean age 22.1 years (+/-3.75), mean weight 78.5kg (+/-9.3), mean height 180.9cm (+/-6.9). 48 footballers kicked with the right foot predominantly.

Restrictions: There was an average of 2.7 (out of 9) of these restrictions in each player assessed. Restriction of the hamstrings extensibility was the most common (left 46.3% and right 37.3%) followed by both the left and right hip flexors (44.8%). Restriction of piriformis and posterior hip was the least common (right 13.4% and left 14.9%).

The association between failed tests of site and direction (UCM) and restrictions

The significant predictor variables indicate that:

- A failed test associated with UCM right foot pronation (high threshold) raises the odds of a restriction of right hamstring by 64.74 times
- A failed test associated with UCM right hip abduction (low threshold) raises the odds of a restriction of right hip flexor by 13.73 times
- A failed test associated with UCM left neck rotation (high threshold) raises the odds of a restriction of thoracic extension by 13.59 times
- A failed test associated with UCM right hip medial rotation (low threshold) raises the odds of a restriction of left hamstring by 11.40 times
- A failed test associated with UCM left hip medial rotation (low threshold) raises the odds of a restriction left hip flexor by 11.16 times

Conclusions

The results of this study suggest a link exists between movement restrictions and UCM. Since UCM is associated with pain and injury, and restrictions may be associated with UCM, then an association between restrictions and injury prevention may be dependent on the related UCM. Evaluating and managing restrictions may still play a role in injury prediction and prevention if the associated UCMs are evaluated and managed. Movement screening in Football could be improved by including the analysis of movement control and movement restrictions. Analysis of a players movement profile can direct interventions for individual management programs. Further research should explore the relationship of movement restrictions, the control of movement and injuries in footballers.