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THE IMPACT OF JOINT HYPERMOBILITY SYNDROME ON KNEE PROPRIOCEPTION IN A WEIGHT-BEARING POSITION IN ADULTS.

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INTRODUCTION

Joint hypermobility syndrome (JHS) is a heritable connective tissue disorder associated with multiple joint laxity and pain. The term JHS has been superseded by diagnoses of hypermobile Ehlers-Danlos Syndrome and Hypermobility Spectrum Disorders but the current study pre-dated the new diagnostic criteria.

Joint hypermobility and instability might be associated with deficits in joint proprioception. Previous research explored proprioception in a non-weight-bearing position. However, a weight-bearing position may be more appropriate for exploring joint proprioception because it is capable of stimulating the entire mechanoreceptor system and is more functionally relevant.

The aim of this study is to explore knee proprioception in a weight-bearing position in adults with JHS.

METHODS

A cross-sectional design was employed comparing a group of adults with JHS with an age and gender matched control group. Knee proprioception was examined using the angle reproduction test and the squat task at three knee flexion angles; 20, 25 and 30 degrees, bilaterally, and recorded using a Qualisys 3-dimenstional motion capture system.

Participants were guided by the researcher to each specific target angle, returned to an upright position, and then were asked to reproduce the target angle. The task was repeated two times at each angle and the mean absolute error (the difference between the target and recorded angle) was compared between groups using a Mann-Whitney U test.

RESULTS

The JHS group included 29 women and two men aged 38.52 ±14.14 years (mean ± SD), while the control group included 29 women and two men aged 39.06 ± 12.43 years.

No significant differences in absolute error were found between the two groups in the dominant knee proprioception at any target angle: at 20 degrees, the absolute error was 2.32 (3.67) degrees for JHS group and 1.94 (4.36) degrees for the control group; median

(interquartile range) (p = 0.85), at 25 degrees, absolute error was 2.24 (3.20) degrees for the JHS group, and 1.48 (2.59) degrees for the control group (p = 0.38), and at 30 degrees, the absolute error was 3.63 (4.59) degrees for the JHS group, and 3.15 (3.63) degrees for the control group (p = 0.60).

For the non-dominant knee, no significant difference was found at 20 degrees; 1.56 (3.98) degrees for the JHS group and 2.25 (3.56) degrees for the control group (p = 0.35). However, a significantly greater absolute error was revealed in the non-dominant knee at both 25 degrees: 2.82 (2.40) degrees for the JHS group and 1.26 (2.42) degrees for the control group (p = 0.001), and at 30 degrees: 3.59 (3.62) degrees for the JHS group and 1.61 (2.76) degrees for the control group (p = 0.01).

CONCLUSION

People with JHS demonstrated proprioceptive deficits in the non-dominant knee but not in the dominant knee when tested in a weight-bearing position. The findings suggest that employing functional positions to examine knee proprioception might be useful in JHS and that rehabilitation could focus on the non-dominant side.

DECLARATIONS OF INTEREST

None