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Cam morphology is associated with early hip OA features in young adult football players with and without hip and groin pain

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Introduction: Playing football may increase a person's risk of developing hip OA in later life. This may be related to cam morphology, which is present in two thirds of football players. However, the relationship between cam morphology, symptoms and early hip OA is unknown in football players. This study had two aims: 1) examine the relationship between cam morphology and early hip OA features (cartilage defects and labral tears) in football players with and without hip/groin pain; 2) investigate if the association between cam morphology and early hip OA features is stronger in football players with hip/groin pain.

Methods: 182 semi-elite football (soccer/ Australian football) players (288 hips; 50% soccer; age:26yrs; height:1.79m; weight:78kg; 20% women) with hip/groin pain (>6 months of pain and +ve flexion-adduction-internal-rotation test) and 55 semi-elite control football players (110 control hips; 55% soccer; age:26yrs; height:1.79m; weight:79kg; 25% women) without hip/groin pain underwent AP and Dunn 45° radiographs, and 3-tesla hip MRI. Cam morphology was defined using continuous (alpha angle) and threshold (cam morphology >60° to £78°; large cam morphology >78°) values, and cartilage defects and labral tears were scored semi-quantitatively. Presence and location of cartilage defects and labral tears were determined. Logistic regression with generalised estimating equations were used to determine whether cam morphology was associated with early hip OA features. An interaction term was incorporated into all regression models to test if the relationship between cam morphology and early hip OA features was stronger in football players with symptoms.

Results: Greater alpha angle was associated with cartilage defects (OR 1.03, 95%CI 1.01,1.04) and labral tears (OR 1.02, 95%CI 1.01,1.04). Hips with cam (OR 2.12, 95%CI 1.2,3.7) and large cam (OR 2.58, 95%CI 1.5,4.6) morphology had a higher prevalence of cartilage defect than hips without. Only hips with large cam morphology (OR 2.53, 95%CI1.3,4.7) had a higher prevalence of labral tears than hips without. Greater alpha angle was associated with superolateral cartilage defects (OR 1.03, 95%CI 1.02,1.05) and superior labral tears (OR 1.03, 95%CI 1.02,1.05). The association of cam morphology with early hip OA features was no greater in football players with symptoms than in those without (P=0.127 to 0.985)

Discussion: Cam morphology was associated with early hip OA features in adult football players with and without pain. This relationship was no greater in football players with symptoms than without, suggesting a complex relationship between cam morphology, early hip OA features and hip/groin pain

Conflict of interest statement: My co-authors and I acknowledge that we have no conflict of interest of relevance to the submission of this abstract.

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Rehabilitation for atraumatic shoulder instability in circus arts performers: delivered via telehealth

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Background: The Watson Instability Program (WIP1) is the highest level of evidence for the conservative management of atraumatic shoulder instability, but it is unknown if this program can be effectively delivered via teleconsultation. The aim of this study observational single cohort study was to determine the effects of the WIP1 on patient reported outcome measures, scapula position, shoulder strength and handstand stability in student circus performers with atraumatic shoulder instability, when delivered via teleconsultation.

Methods: Student circus performers aged between 15 and 35 from the National Institute of Circus Arts were recruited. A 12-week shoulder exercise program was delivered via teleconsultation during the Melbourne, Australia Covid-19 lock-down. Primary outcome measures were the Western Ontario Shoulder Index and the Melbourne Instability Shoulder Score. Secondary outcomes measures included the Orebro Musculoskeletal Pain Questionnaire, The Tampa Scale for Kinesiophobia and physical assessment measures including strength via hand-held dynamometry, scapula position using an inclinometer and handstand stability via center of pressure fluctuation. Patient reported outcomes were collected at baseline, 6-week, 12-week, 6-month and 9-month timepoints, and physical outcomes were measured at baseline and 9-month timepoints.

Results: Twenty-four student circus arts performers participated in the study. Significant improvements were found for both Western Ontario Shoulder Index, Melbourne Instability Shoulder Score ($p<0.001$) and Orebro Musculoskeletal Pain Questionnaire scores ($p<0.01$) at all follow up timepoints. The Tampa Scale for Kinesiophobia scores reached significance at 6-weeks and 3-months ($p<0.05$). Following rehabilitation, statistically significant increases in shoulder strength in all positions tested and increased scapula upward rotation measured at end of range abduction, and during loaded external rotation were found. Prior to rehabilitation, the affected arm showed greater instability compared to the unaffected arm during handstand. Post-rehabilitation, a significant intervention effect existed for the affected arm, showing greater consistency in anterior-posterior movement pattern.

Discussion: The WIP1 is an effective program for improving shoulder symptoms and physical function in individuals with atraumatic shoulder instability. Though it cannot be confirmed if outcomes are equivalent to that of face-to-face delivery.

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Experiences of student circus arts performers undertaking a shoulder rehabilitation program via telehealth consultation during the COVID-19 pandemic

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