Objective To identify differences between injured and uninjured athletes for ACWR based on workload quantity, magnitude, and weighted magnitude.

Design Matched-pair cohort.

Setting Youth basketball.

Participants Fifty (25F, 25M; 16.5 years; 66.2 kg; 173.5 cm) basketball players on four high school teams.

Assessment of Risk Factors A wearable device (VERT® Classic) was used to record jump count and jump height for all participants during practices and games throughout the 17-week season.

Main Outcome Measurements Ten athletes were diagnosed with either patellar or Achilles tendinopathy, and were matched by height and weight with teammates that had no injuries. ACWRs were calculated weekly for three workload types: jump count, jump height, and jump height weighted for tendon damage. Paired t-tests compared mean ACWR of injured and uninjured athletes for each measure of workload.

Results There was no significant effect of injury status for jump count ACWR (injured mean (95% CI): 1.077 (1.011–1.132), uninjured: 1.025 (0.906–1.162); p=0.121) or jump height ACWR (injured: 1.079 (1.015–1.136), uninjured: 1.018 (0.886–1.155); p=0.081). ACWR with jump height weighted for tendon damage was higher for injured (1.075 (0.929–1.243)) compared to uninjured athletes (0.939 (0.729–1.266); p=0.045).

Conclusions Athletes with patellar or Achilles tendinopathy have a greater ACWR than uninjured athletes when workload is calculated as jump height weighted based on tendon properties. This result was not apparent when ACWR was based on the number of loading cycles or the unweighted loading magnitude. Future research into overuse injury prevention should consider the damage accumulation in biological tissue due to repetitive loading.

Background Throwing is a highly skilled movement performed at the extremes of glenohumeral motion. The constant micro-trauma in the throwing shoulder challenges the physiologic limits of the surrounding tissues and leads to modifications in range of motion, due to osseous and soft tissue adaptations.

Objective We aimed to characterize the changes that occur in glenohumeral mobility in volleyball players, determining if these would be different compared to other overhead sports and if differences existed between the two shoulders.

Design This was a cross-sectional study, with clinical data collected from questionnaires and functional evaluation using a goniometer.

Setting The subject group consisted of volleyball players from the major league and/or the national team.

Participants The selection criterion was being a volleyball master athlete of a major competition without shoulder complaints; this enrolled a total of 66 professional males.

Interventions Bilateral range of motion (active and passive) was assessed with a goniometer, in both throwing and non-throwing shoulder. We also tested stability.

Main Outcome Measurements We measure forward elevation, extension, external and internal rotation. The specific tests were apprehension, anterior and posterior drawer, and the sulcus sign.

085 THE IMPACT OF OVERHEAD SPORTS: ASSESSMENT OF SHOULDER RANGE OF MOTION IN 1ST LEAGUE PROFESSIONAL VOLLEYBALL PLAYERS

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Results The dominant shoulder displayed significantly increased external rotation when compared with the non-dominant (120.92°±14.85 vs 106.78°±12.53). Internal rotation was decreased by 11.99° in the throwing shoulder (p=0.047). Concerning forward elevation, a tendency for greater values was noted (p=0.08), with a higher degree in the throwing arm.

Conclusions Range of motion was different between shoulders. Our athletes had an increase in external rotation and a loss of internal rotation in the throwing shoulder, being concordant with what is described in other overhead sports. Furthermore, the dominant shoulder had a significant increase in forward elevation. These findings support the need of performing these evaluations to monitor the development of injuries, so that preventive measures can be taken.

**Background** Although athletes who are wheelchair users for both daily activity and sport participation are at high risk for shoulder injuries, little is known regarding the characteristics of shoulder injury in this population.

**Objective** To determine the relationship between shoulder symptoms (SS), physical exam findings (PEF), and structural pathology (SP) in elite wheelchair athletes competing in athletics and powerlifting.

**Design** Cross-sectional study.

**Participants** 80 elite wheelchair athletes competing in track (n=40), field (n=19) and powerlifting (n=20) who also used a manual wheelchair for daily mobility.

**Assessment of Risk Factors** A senior sports physiotherapist and musculoskeletal radiologist obtained measures of SS, PEF, and MSK ultrasound (MSK-U) findings. Relationships between measures and for sub-groups by sporting discipline were calculated.

**Main Outcome Measurements** The Wheelchair Users Shoulder Pain Index (WUSPI), Physical Examination of the Shoulder Scale (PESS), and the ultrasound Shoulder Pathology Rating Scale (USPRS).

**Results** A total of 51 of 80 athletes reported dominant shoulder pain. PESS scores were 7.4 ± 6.7, WUSPI 22.3 ± 26.9 and USPRS 5.2 ± 4.0. A positive main effect was found for pain history on PESS (F1,154 = 9.57 p = 0.002, $\eta^2_p = 0.06$) but no interaction with athlete sub-group (F2,154 = 1.90 p = 0.15, $\eta^2_p = 0.02$). There were no USPRS score differences between sub-groups, but track athletes had lower WUSPI scores and lower PESS scores. The WUSPI and PESS which were not strongly correlated (0.71), while the USPRS which did not correlate with either the PESS (0.21) or WUSPI (0.20).

**Conclusions** Elite wheelchair athletes have a high prevalence of MSK-U pathology with low-moderate levels of SS and PEF. MSK-U findings do not correlate with SS or PEF. These findings are an important step to educate the development of targeted preventative measures.