drawn using Kinovea and an average of seven consecutive steps was calculated for each angle. The four outcome measures were clustered using K-means cluster analysis (n=2–10). Silhouette coefficients were used to detect optimal clustering.
**Results** The cluster analysis led to the classification of two distinct subgroups (mean silhouette coefficient=0.53). Cluster 1 (n=39) was characterized by higher foot inclination and tibia inclination at initial contact, higher knee flexion during midstance, and lower hip adduction during midstance compared to cluster 2 (n=14). Fifteen out of 17 (88%) shin injuries were classified in cluster 1. Other injuries were more divided over both clusters. The ratio males/females was higher in cluster 1 (44%) versus cluster 2 (27%).
**Conclusion** This is the first study to classify subgroup profiles of running kinematics in recreational runners with an RRI based on two-dimensional video analysis. Two distinct subgroups were identified. This subclassification can help clinicians in their clinical reasoning process when evaluating kinematics of runners with an RRI and developing targeted gait-retraining strategies.

## 18 TWO-DIMENSIONAL VIDEO ANALYSIS DURING RUNNING IN RECREATIONAL RUNNERS WITH AND WITHOUT RUNNING-RELATED KNEE INJURY

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**Introduction** The aim of this study was to compare running kinematics between recreational runners with and without running-related knee injury using two-dimensional video analysis.
**Materials and methods** Forty-two recreational runners (18 injured, 24 non-injured) participated in the study. The injured group consisted of runners with anterior or lateral knee pain, resulting in altered running activity for at least one week. All participants ran on a treadmill at preferred speed. Digital videos were recorded in the frontal and sagittal plane with two iPads. Outcome measures included foot and tibia inclination at initial contact, and lateral trunk position, contralateral pelvic drop, femoral adduction, hip adduction, knee flexion and ankle dorsiflexion during midstance. All angles were manually drawn using Kinovea and an average of seven consecutive steps was calculated for each angle. Participant characteristics (gender, age, body weight, body length, body mass index, running volume before injury, running speed) and two-dimensional measured angles were compared between groups with independent t-tests (normally distributed) and the Mann Whitney U test (non-normally distributed).
**Results** There were no significant differences in participant characteristics between groups (p>0.05). The injured group exhibited significantly more femoral adduction (p=0.031) and hip adduction (p=0.004) during midstance, and significantly less foot inclination at initial contact (p=0.026).
**Conclusion** Two-dimensional video analysis discriminated kinematics between runners with and without running-related knee injury. More femoral adduction and hip adduction during midstance, and less foot inclination at initial contact may provide gait retraining targets when treating runners with running-related knee injury.

## 19 DO CLINICAL MEASURES RELATE TO RUNNING ASYMMETRIES IN PATIENTS WITH ACHILLES TENDINOPATHY?

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**Introduction** Achilles tendinopathy is an overuse injury that commonly sidelines runners and has a reinjury rate of 44%. Aberrant loading patterns during the return-to-sports (RTS) phase may partially explain reinjury rates, but it remains unknown if clinical measures are associated with loading behaviors. Therefore, we aimed to establish relationships between side-to-side differences in running mechanics and side-to-side differences in clinical measures of pain, tendon structure, and calf muscle function.
**Materials and methods** 12 runners with Achilles tendinopathy were included (age:44±11 y; height:171±10 cm; mass:70 ±12 kg; VISA-A score:71±10; current mileage:40±29 km/wk). Participants completed a 7 min run at endurance pace (2.9 ±0.3 m/s) on an instrumented treadmill with retroreflective markers affixed to their lower extremities. After a 6 min familiarization period, marker trajectories and ground reaction forces were sampled. Sagittal plane ankle joint moments and powers were calculated and a musculoskeletal model was used to estimate Achilles tendon loads. Pain-pressure threshold, tendon geometry, and calf muscle endurance were measured bilaterally with algometry, ultrasound imaging, and the heel-rise endurance test, respectively.
**Results** Side-to-side differences in pain-pressure threshold were significantly related to side-to-side differences in Achilles tendon loading rate (r=0.62; p=0.03) and peak plantarflexion moment (r=0.58, p=0.05). Side-to-side differences in peak eccentric ankle joint power were significantly related to side-to-side differences in tendon thickness (r=0.59, p=0.04) and cross-sectional area (r=0.73; p=0.01). Side-to-side differences in calf muscle endurance was significantly related to Achilles tendon loading rate (r=0.64; p=0.03).
**Conclusion** Clinical measures of pain and calf muscle endurance relate to side-to-side differences in Achilles tendon loading rates during running, while tendon geometry relates to eccentric ankle joint power.

## 20 THE ACHILLES TENDON TOTAL RUPTURE SCORE SHOULD BE USED WITH CAUTION THE FIRST 6 MONTHS AFTER INJURY

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**Introduction** The Achilles tendon Total Rupture Score (ATRS) is the most commonly used patient reported outcome in patients with an acute Achilles tendon rupture. The score