

CLIMBING INJURY AUDIT

VERONICA LEE | ROB HUNTER

Key Points

1. 128 people (male 80, female 48) = number of climbing injuries seen at Gravity Climbing Centre over a 2 year period between Jan 2015 to Dec 2016.
2. 66% of the injuries seen were upper limb injuries and were all soft tissue in origin. Mostly overuse injuries.
3. The most frequent area of injury was the shoulder. Where 88% of the shoulder injuries had rotator cuff disorders and/or scapular instability.
4. Females are more likely to injure their shoulders over any other area.
5. Elbow injuries seem to be predominantly seen in males with a very low incidence in females. Must be that females are better climbers!
6. 62% of people assessed and treated by My Therapy only required 1-2 sessions and were 80-100% better.
7. Higher incidence of finger injuries in males than females.

Introduction



Image 1. Rob Hunter competing in G-Force 2015.

Climbing is a relatively safe sport but like all sport there is the potential risk of injury. Image 1, highlights how climbing is an all body sport requiring the whole body from your toes to your fingertips to work synergistically as one to bring about the desired movement. These demands on the body have demonstrated injuries in all joints of the body which have been seen by My Therapy Physio & Performance. The purpose of this audit is to gather information about the types of climbing injuries assessed, and the distribution of injury within males and females. The information gathered was taken over a 2 year period from Jan 2015 to Dec 2016 using data from the Gravity Clinic that My Therapy run twice a month. It followed up on 128 people to gain insight on their percentage improvement and their compliance to rehabilitation. The aim is to highlight trends in the types of injuries seen and

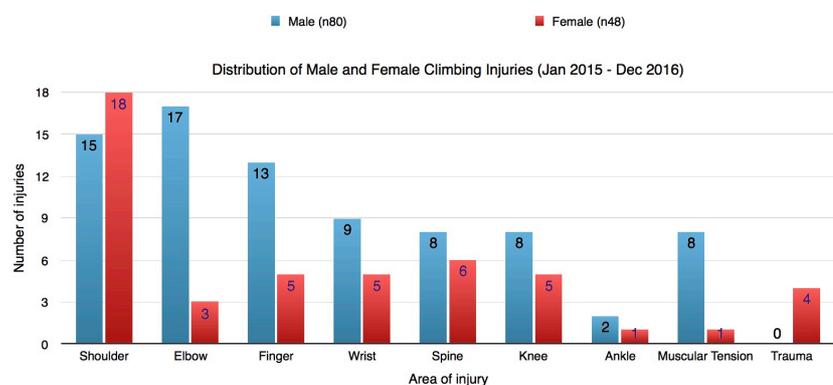


Table 1. Distribution of male and female climbing injuries.

whether they ameliorate with rehabilitation, therefore reinforcing best practice and supporting My Therapy's current injury prevention advice and/or highlight areas of improvement. The results rely on each individual who have been assessed and treated by My Therapy to respond to email correspondence, however inevitably feedback was not received from everyone.

It is important to note the ratio of male to female climbers in the distribution of injury. From this climbing injury audit the percentage of male injuries is 62.5% and the percentage of female injuries is 37.5%, making the ratio of male to female injury to be 3.3:2. This correlates with Gravity Climbing Centres current male to female climbing population which they estimated the male to female ratio to be 3:2 respectively. Hence when looking at each climbing injury one would expect a similar male to female ratio. Table 1 highlights that not all areas of injury fit into this male to female ratio of 3:2 particularly in shoulder, elbow and finger injuries.

Shoulder Injuries

- Shoulder injuries is the most common area of injury and accounted for 25% of the total number of male and female injuries.
- 88% of shoulder injuries had rotator cuff (RC) disorders and/or scapular instability (see table 2).
- 60% of the shoulder injuries treated were 80-100% better after 1-2 sessions.
- Another 15% reported improvements and had returned to climbing but did not provide percentage improvement.
- Unfortunately there was another 15% who did not provide feedback.
- There is a higher incidence of female shoulder injuries compared to males. The male to female ratio of shoulder injury is 1.6:2 respectively which does not fit the 3:2 male to female climbing population ratio, suggesting that shoulder injury is of higher probability in females (see table 2).

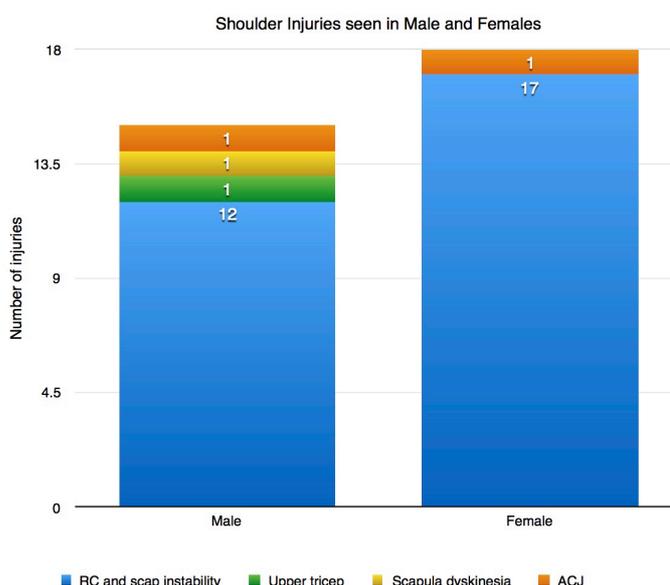


Table 2. Number and type of shoulder injuries in male and female

- When looking at just female injuries (see table 1) it would appear females are more likely to injure their shoulder than any other area, where shoulder injuries account for 37.5% all off the female injuries seen.

Elbow Injuries

- 2nd most common area of injury. Table 3 shows the type of elbow injuries seen; tennis elbow, golfers elbow and brachialis tendinopathies.
- 85% of elbow injuries were male with a very low incidence of female elbow injuries. Table 1 under the elbow column highlights the disproportionately high number of elbow injuries seen in males in contrast

to females. The ratio for male to female elbow injury is 11.3:2 respectively which suggests elbow injury is of higher probability in males.

- Tennis elbow and golfers elbow was prevalent in all age categories from 20's through to 50's.
- However brachialis/distal bicep tendon injuries seem to only occur in younger climbers in their 20's.
- 75% of the elbow injuries treated were 80-100% better after 1 session. Feedback was not received from 20% of people. 5% reported 40-60% improvement and the main reason for no further improvement was poor compliance to exercises.

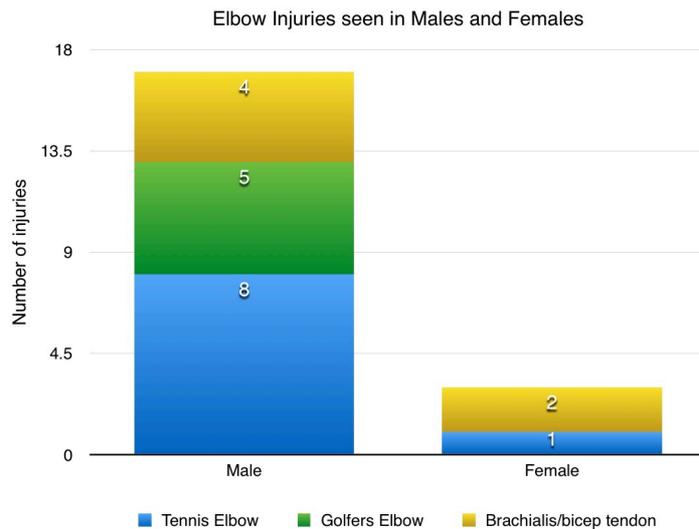


Table 3. Number and type of elbow injuries in male and female

Finger Injuries

- 3rd most common area of injury. Table 4 shows the type of finger injuries seen; finger flexor strains (i.e. flexor digitorum superficialis/flexor digitorum profundus), pulley strains, synovitis and lateral collateral ligament strains.
- Again it appears to be predominantly males who sustain finger injuries. 72% were males and 27% were females (male to female ratio 5.2:2 respectively).
- 50% of the finger injuries were flexor digitorum profundus (FDP) and flexor digitorum superficialis (FDS) strains of which 90% of this type of injury recovered 100% after 1 session.
- 33% were pulley injuries and again they recovered well, 72% were 80-100% better after 1 session.
- Please note that each person was given an individual rehab plan and length of recovery varied from 2 weeks to 3 months dependent on severity of the injury.
- This finding differs to Dr Schoffl's (Orthopaedic surgeon and author of One Move Too Many) audit of climbing injuries from his clinic in Germany from 2009 - 2012. They found A2 pulley injury was the most frequent in their clinic however in Dublin the most occurring injury are rotator cuff disorders.

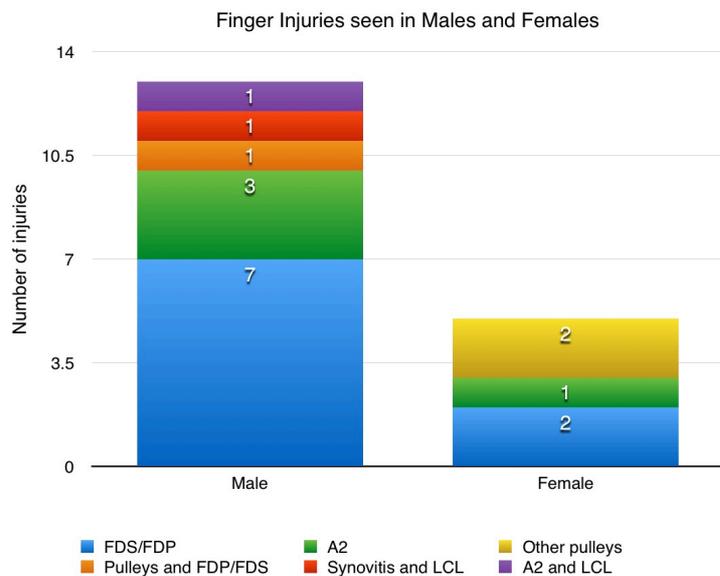


Table 4. Number and type of finger injuries in male and female

- People with a combination of finger injuries did not rehabilitate as well i.e. if they had A2 pulley injury as well as lateral collateral ligament (LCL) injury.

Wrist Injuries

- 4th most common area of injury. Table 5. shows the types of wrist injuries seen.
- 64% of wrist injuries seen in males and 36% seen in females. This is more representative of the 3:2 male to female climbing population in Gravity.
- The 2 main categories of wrist injury appears to be Triangular Fibrocartilage Complex (TFCC) and ligament injury due to muscle imbalances within the wrist and forearm.
- Compliance to rehabilitation appeared to be the worse in wrist injuries were 21% openly admitted poor motivation for the exercises.
- For the 57% of people who did follow the rehabilitation plan they reported 80-100% improvement after 1 session.

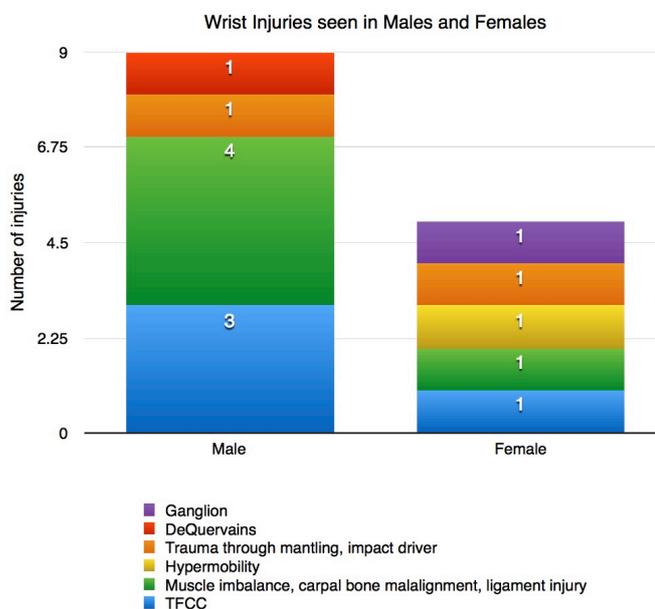


Table 5. Number and type of wrist injuries in male and female

Neck/Back Injuries

- Most of the neck and back injuries seen were premorbid and were not caused by climbing. However these injuries still impeded performance in climbing.
- 64% of people with either neck or back injuries reported 80-100% improvement after 1 session. Another 28% did not provide feedback.

Knee Injuries

- Most of the knee injuries were either meniscal tears or hamstring strains from heel hooking and drop knees. 69% of people reported 80-100% improvement after 1-2 sessions.

Ankle Injuries

- My Therapy only saw 3 ankle injuries (ankle sprain, plantar fasciitis, achilles tendon pain) all of which fully recovered after 1 session.

Trauma

- Only 4 people sustained a traumatic injury from falling whilst climbing which resulted in fractures.
- 2 lumbar spine fracture, 1 fracture dislocation of elbow, 1 ankle fracture.
- The individual who sustained the fracture dislocation of elbow made a full recovery and has returned to climbing. The remaining 3 trauma injuries have recovered to a certain degree however they still have some pain but have returned to climbing.

Percentage Improvement

Below is a summary of the feedback received regarding percentage improvement after each individuals episode of care with My Therapy. Not everyone provided percentage improvement (13 people reported improvement but did not give percentage improvement) and unfortunately 19 people did not provide feedback. Overall 83% of the people assessed and treated by My Therapy saw improvements after 1 session.

Percentage of people	Percentage improvement	Number of sessions
62%	80-100%	1-2
11%	40-80%	1
10%	Reported they had improved and returned to climbing but did not provide percentage improvement.	1
14%	Did not receive feedback	1

DISCUSSION/SUMMARY

- My Therapy's ethos is to provide evidence based practice that is tailored to each individual and to educate and empower each person to understand their injury. This is highlighted in the fact that up to 80% of people only required 1 session to see improvements and that the majority of people do not require multiple sessions. If people understand their injury they will be more motivated to perform their rehabilitation and therefore take control of their injury. However, because climbers are very motivated to return to climbing sometimes its managing the over exercising!
- The majority of climbing injuries seen by My Therapy are upper limb soft tissue injuries (ie tendons, ligaments, muscles) from overuse, particularly shoulders and elbows. Out of the 128 injuries only 4 of them were traumatic i.e from a fall whilst climbing indoors and outdoors. However the FDS/FDP (finger flexors) strains and pulley injuries were mostly acute onset following one specific incident, generally moving dynamically for a crimp or pocket.
- Overall the shoulder was the most common area of injury where rotator cuff disorders was the most frequent.

DISCUSSION/SUMMARY continued...

- Females who sustained shoulder injuries were all unable to do proper pull ups with any consistency of reps and sets, however is this correlation or coincidence?
- People with persistent elbow injuries should have shoulder stability assessed. In a number of the elbow injuries seen, correction of shoulder engagement when climbing was required and strengthening the whole shoulder girdle was important to see further improvements in the elbow.
- There was a very high incidence of elbow injury in males. Is this because they tend to pull more with their elbows hence, overloading and leading to tendinopathies? Does it mean that males need to focus more on their footwork rather than their strength?
- Interestingly there was no incidence of golfers elbow in females. Golfers elbow is usually associated with "locking off" in climbing. Again is this an issue of strength or is it that females generally use their feet better meaning they don't need to lock off?
- It was very difficult to distinguish from a beginner to an intermediate to an advance climber and whether the level of climber showed any indication/trend to injury prevalence/occurrence. The grade that someone climbs is not a predictor of the level of climber you are. For example, we see people who have been climbing for 20 years and are extremely experienced but climb font 6a/b. Does this make them an experienced intermediate climber or just a beginners/intermediate climber? Hence trying to categorise climbers into beginners, intermediate and advanced was not feasible. Overall injuries were seen across the spectrum of climbers, climbing 1 year or less and through to climbers climbing for 20-30 years. Hence, unfortunately regardless of experience and level, no one is at less of a risk to injury.
- It was difficult to follow up and receive formal feedback from everyone. Correspondence was through a questionnaire email which was sent out between October to December 2016 therefore for some people it was 2 years post injury. Hence a more prompt and standardised questionnaire may provide better compliance to response and also more accurate feedback.
- Another contributing factor to the type of injuries seen could be due to the commercial climbing wall's route setting. When comparing My Therapy's data to Dr Schoffl's (Orthopaedic surgeon and author of One Move Too Many) data, Dr Schoffl found A2 pulley strains to be the most common injury whereas in contrast My Therapy's were rotator cuff disorders. A very possible explanation for Dr Schoffl's data is that he is based in the Frankenjura area which is renowned for its steep fingery pocket climbing. Whereas in Dublin there has been a change in the style of climbing, moving away from the old school crimp climbing to the introduction of volumes, which requires more 3D contortionist moves. Both of these styles of climbing have their pro's and con's and this migration to this newer style maybe changing the prevalence and types of injuries that one would see.

RECOMMENDATIONS FOR CLIMBERS

- My Therapy ran a climbing injury prevention workshop at Gravity Climbing Centre in February 2017 based on this audit. The strength and conditioning exercises were organised into a very comprehensive warm up and cool down which covered mobility, stability and strengthening exercises for all the major joints in the body. This workshop will run again later in the year, it is called "BE BULLET PROOF: UPPER LIMB INJURY PREVENTION WORKSHOP".

RECOMMENDATIONS FOR CLIMBERS *continued...*

- Perform a comprehensive warm up which includes a pulse raiser e.g. one of our favourites are Mountain Climbers (see image 2). It should include mobility exercises for all the joints of the body. This is a good time to activate rotator cuff and scapular stability muscles. However it is important not to do too many reps and sets were you fatigue them during the warm up. It is also important to warm up hamstrings and gluteals for heelhooking.
- Incorporate antagonistic exercises like press ups into your routine either after a climbing session or on separate days.
- Be smart about your training. Try to have a days rest between climbing sessions if they are particularly intense. Limit your climbing at the commercial walls to 2 hours a session.
- Do not leave your project or the most difficult climbs towards the end of your session. They should be attempted towards the middle of a session.
- If you stretch, leave the long slow stretches for the end of a session or separate to a climbing session.



Image 2. Mountain Climbers. Start in plank and raise alternate knees to elbows at speed. Aim for 1 minute.

My Therapy Clinics

If you would like to book in with My Therapy they run clinics in Lisburn and Dublin, for more details on their services go to their website www.mytherapyphysio.com.

LISBURN CLINIC

2 Killowen Mew
Lisburn
BT28 3AR

Monday 10am - 6pm
Tuesday 10am - 8pm
Wednesday 10am - 6pm
Thursday 10am - 6pm
Friday 10am - 6pm

email: info@mytherapyphysio.com

DUBLIN CLINIC

Gravity Climbing Centre
Unit 6a, Goldenbridge Industrial Estate,
Inchicore, Dublin 8, Ireland

Alternate Fridays. See Facebook page for dates.

Friday 12noon - 8pm

email: info@mytherapyphysio.com