

## INTRODUCTION

- ROCK CLIMBING IS GROWING EXCEEDINGLY MORE POPULAR WITH EVERY PASSING YEAR.
- SO WHAT KIND OF PHYSIOLOGICAL FACTORS ARE AT PLAY IN SPORT CLIMBERS?
- STUDIES HAVE LOOKED AT THE CORRELATION BETWEEN ANTHROPOMORPHIC ASPECTS OF SPORT CLIMBERS SUCH AS HEIGHT, ARM SPAN AND BODY FAT PERCENTAGE AND FOUND NO STATISTICAL DIFFERENCES BETWEEN COMPETITIVE CLIMBERS AND CONTROL SUBJECTS (1).
- THE SAME STUDY COMPARED TRAINED HAND AND UPPER BODY STRENGTH OF ELITE SPORT CLIMBERS AND FOUND THAT ~58.9% OF VARIATION IN SPORT CLIMBING PERFORMANCE CAN BE EXPLAINED BY TRAINING REGIMENTS AND EXPERIENCE (1).
- HOWEVER THERE IS A LOT OF CONTRADICTIONS WHICH STATE THAT THERE IS NO COMPARATIVE DIFFERENCE IN GRIP STRENGTH BETWEEN NON CLIMBERS, RECREATIONAL CLIMBERS AND ELITE SPORT CLIMBERS (2).

## OBJECTIVES

- TO LOOK AT THE POTENTIAL LEARNED PHYSIOLOGICAL ADAPTATIONS DEVELOPED IN ROCK CLIMBERS
- TO COLLECT DATA FROM LOCAL CLIMBERS AND COMPARE TO PREVIOUS LITERATURE TO
- TO DISCUSS CORRELATIONS BETWEEN CLIMBERS AND NON-CLIMBERS, AND VIEW ANY POTENTIAL DIFFERENCES IN STRENGTH AND ENDURANCE

## METHODS

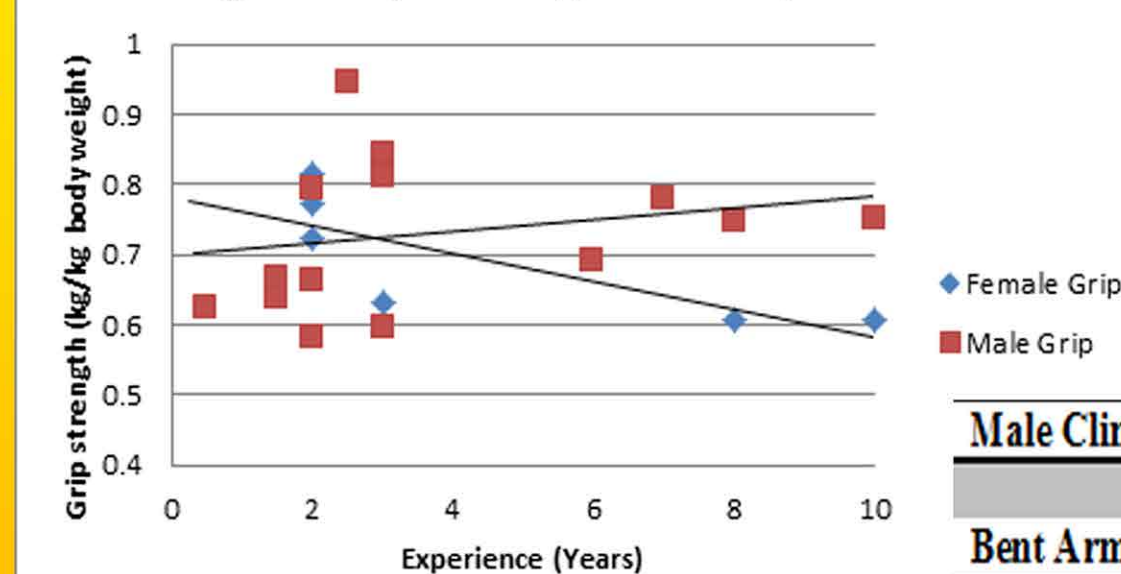
- PARTICIPANTS AGE 18-38 WERE GATHERED VIA SIGN-UP SHEET AND POSTERS AT OVERHANG EDUCATION CENTER
- PARTICIPANTS TESTED: MALE CLIMBERS (N=16), FEMALE CLIMBERS (N=10), MALE NON-CLIMBERS (N=6), FEMALE NON-CLIMBERS (N=9).
- USED A HAND GRIP DYNAMOMETER AND CLIMBING HANG BOARD/CHIN UP BAR FOR DATA COLLECTION
- FOR FULL DETAILS ON METHODS VIEW MERMIER ET AL. 2000

## ACKNOWLEDGMENTS

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## RESULTS

Fig 1. Grip Strength vs. Experience



ALL VALUES CORRECTED FOR STANDARD DISTRIBUTION (LOG10) BEFORE COLLECTING T-TEST RESULTS

Male Climbers (n=15)

	Mean	SD	Range	Correlation to non-climbers
Bent Arm hang time (s)	38.09	9.89	20.6-55.5	P= 0.018*
Grip strength (kg/kg BW)	0.0.73	0.10	0.58-0.94	P= 0.37
Pincer strength (kg/kg BW)	0.21	0.05	0.13-0.26	P= 0.016*
Grip endurance (s)	72.4	24.89	27-104	P= 0.796

Table 1: Male performance results for climbers with over 6 months experience and comparative analysis. (\*statistical difference based on  $\alpha < 0.05$ )

Female Climbers (n=6)

	Mean	SD	Range	Correlation to non-climbers
Bent Arm hang time (s)	30.11	5.611	25-40	P= 0.0049*
Grip strength (kg/kg BW)	0.69	0.08	0.61-0.81	P= 0.0019*
Pincer strength (kg/kg BW)	0.19	0.05	0.14-0.28	P= 0.087
Grip endurance (s)	101.95	24.08	69-120.75	P= 0.252

Table 2: Female performance results for climbers with over 6 months experience and comparative analysis. (\*statistical difference based on  $\alpha < 0.05$ )

## DISCUSSION

- BASED ON THE RESULTS IN TABLES 1 AND 2, MALE CLIMBERS DO NOT APPEAR TO HAVE SUPERIOR GRIP STRENGTH TO NON-CLIMBERS. FEMALE CLIMBERS ON THE OTHER HAND DO HAVE IMPROVED STRENGTH. THESE RESULTS PARTIALLY MATCH WITH THE FINDINGS OF MERMIER (2).
- THERE SEEMS TO BE NO CORRELATION BETWEEN CLIMBERS AND NON-CLIMBERS IN THE SCOPE OF GRIP ENDURANCE, THOUGH FEMALE ENDURANCE DOES INCREASE WITH YEARS OF EXPERIENCE
- THE RESULTS THAT THERE IS NO CORRELATION BETWEEN EXPERIENCE AND GRIP STRENGTH DO NOT MATCH WITH THE PREVIOUS RECORDINGS OF MERMIER IN 2000 (2).
- HOWEVER DO CORRELATE WITH THE FINDINGS OF WATTS (3).

## CONCLUSION

ACCORDING TO THE DATA COLLECTED IN THIS STUDY, THERE DOES APPEAR TO BE SOME ASPECTS OF INCREASED STRENGTH IN REGULAR SPORT CLIMBERS. HOWEVER THERE DOES NOT SEEM TO BE MUCH CORRELATION IN THE STRENGTH OF A CLIMBER AND THEIR LEVEL OF EXPERIENCE

## REFERENCES

- (1) MERMIER C., JANOT, J., PARKER, D., SWAN, J. 2000. BR F SPORTS MED, 34:359-366
- (2) WATTS, P., MARTIN, D., DURTSCHI, S. 1992. J. OF SPORTS SCIENCES, 11-2:113-117

Fig 2. Grip Endurance vs. Experience

