

Strength and forearm volume differences in boulderers and sport climbers.

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Introduction

- ▶ Bouldering vs sport climbing
- ▶ Potential physiological differences
- ▶ Bouldering and sport climbing no longer the same category
- ▶ Grip strength is an important aspect in both
- ▶ Boulderers have shown a higher grip strength than sport climbers

Aim

- ▶ To investigate if the improved grip strength seen in boulderers, could be the result of muscular hypertrophy or neural adaptations.

Demographics

Variable	Control (N=9)	Sport (N=10)	Bouldering (N=9)
Age	23 ± 4.19	26.07 ± 5.29	27.5 ± 5.7
Years climbing		7.8 ± 3.9	7.1 ± 5.3
Hours pr. week climbing		9.46 ± 4.8	8.1 ± 4.86
Time spent bouldering		1.38 ± 1.4	6.8 ± 2.8**
Time spent sport climbing		7.4 ± 5.3*	0.6 ± 0.84
Best redpoint sport climbing (IRCRA point scale)		17.8 ± 2.45	16.2 ± 8.67
Best redpoint bouldering (IRCRA point scale)		16.9 ± 5.39	22.4 ± 1,95**

* Significant different from boulderers (p<0.05).

** Significant different from sport climbers (p<0.05).

Methods

- ▶ Water displacement method



Methods

- ▶ Fingerboard apparatus
- ▶ Maximal volitional contraction (MVC)
- ▶ Open hand grip
- ▶ One-way Anova and post-hoc Bonferroni



Results

	Control	Sport climbing	Bouldering
Body fat %	16.97 ± 8.39	14.9 ± 7.96	10.01 ± 3.89
Circumference (cm)	26.67 ± 1.95	27.56 ± 1.91	29.17 ± 1.10*
Forearm Volume (FAV)	968.7 ± 195.9	1026.3 ± 197.9	1115.9 ± 100.4
MVC (Newton)	184.86 ± 26.6	277.44 ± 42.8*	371.78 ± 60.4**
MVC (N)/ BW	2.54 ± 0.47	3.92 ± 0.59*	5.14 ± 0.96**
MVC (N) /FAV	0.20 ± 0.04	0.27 ± 0.05*	0.33 ± 0.05**

* Significant different from control (p<0.05).

** Significant different from control and sport (p<0.05).

Conclusion/Future studies

- ▶ Boulders had a higher MVC and MVC/FAV than sport climbers.
- ▶ This increased grip strength seen in boulders could be the result of neural adaptations in the forearm and not muscular hypertrophy, since no difference in FAV was found.
- ▶ Future studies should investigate the physiological or biomechanical mechanism underpinning finger strength.

References

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