

A Novel Tool and Training Methodology for Improving Finger Strength in Rock Climbers

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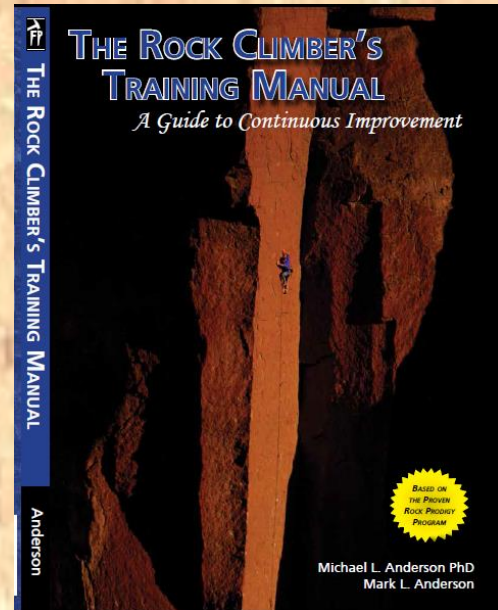
The Rock Prodigy Training Method

- Finger strength-focused
- Linear Periodization

Finger Strength Training - Hangboard

- Isolates finger flexors and extensors isometrically
- Static two-arm dead hangs
- Various grips are trained in-turn
- Typical protocol:
 - 7 x 7 second hang, baseline weight, 3 sec rest between reps
 - 6 x 7 second hang, baseline +10 lbs, 3 sec rest
 - 5 x 7 second hang, baseline + 20 lbs, 3 sec rest

6- 8 grips



Traditional Hangboards

- Single Piece, hand-crafted, not designed for elite finger strength training
- Implicated in injuries (shoulder, elbow, wrist, fingers)

Design Goals:

1. Increase Ergonomics
2. Eliminate Skin Wear
3. Reduce unused material
4. Increase grip specificity to real rock

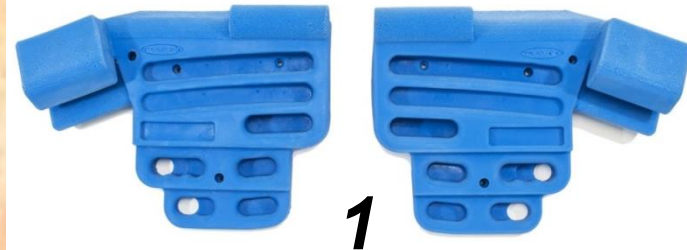


The Rock Prodigy Training Center

A Novel Hangboard Training Device

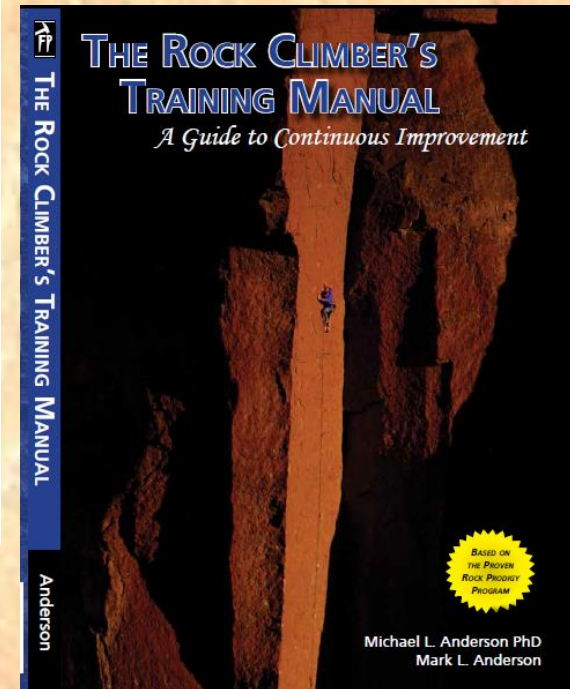
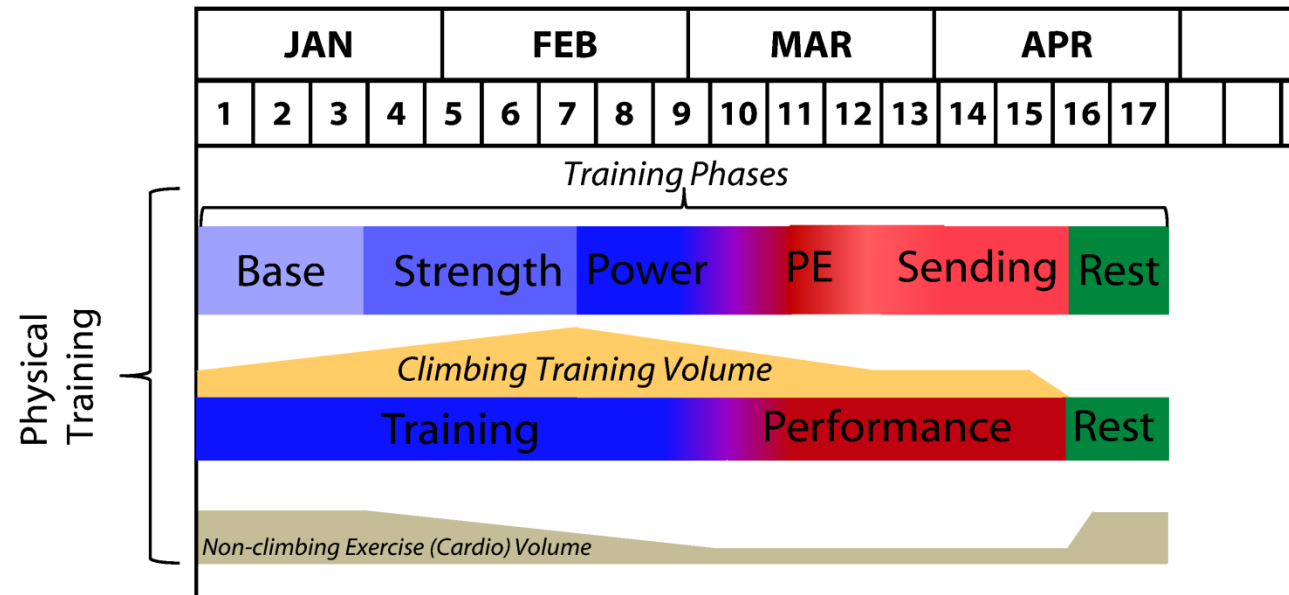
1. Two piece design – adjustable width, rotation
2. Angled grips
3. Grips sets with progressive geometry
4. Rotated Pinch Grips

The Rock Prodigy Training Center



The Rock Prodigy Method

- Linear Periodization
- 12 week training cycle, 6 week performance period
- Finger & “whole body” training

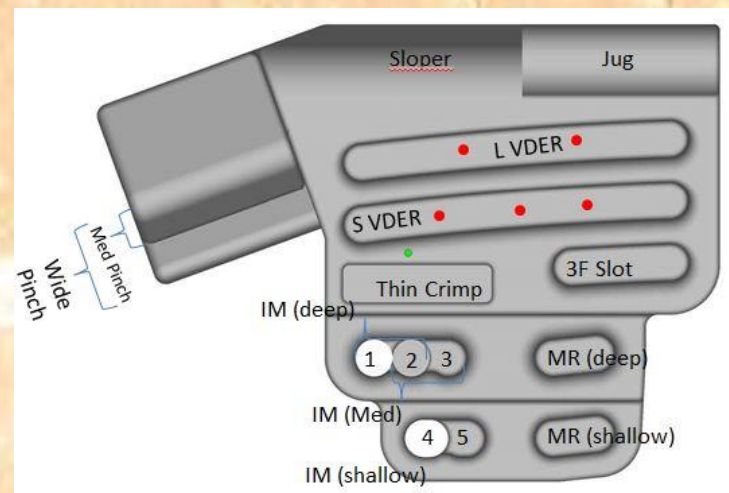


More information at: www.rockclimberstrainingmanual.com

Evaluating the Rock Prodigy Training Center & Rock Prodigy Method

- Does the RPTC and/or RPM improve finger strength in rock climbers?
- Does the RPTC and/or RPM improve rock climbing performance?

- Web-based survey was used, 61-questions
- Voluntary participation
 - Respondents had used the RPTC and/or RPM
- 118 respondents:
 - 13 countries
 - 10.6 years average climbing experience
 - 94% Male
 - **69% indicated they “closely followed” the RP Method**
- Pre-study climbing ability was not well-predicted by experience, frequency of training, or use of a systematic training program
 - Common for long-time climbers to experience long performance plateaus
 - **Indicates lack of effective training protocols for rock climbing**



Results – Finger Strength Improvements

- Athletes recorded “Weight Hanging Ability” for each trained grip (6-10)
 - WHA = Body weight +/- added weight
- After **one**, 4-week training phase (8-10 workouts)
 - Avg increase = **26.1 lbs (11.8kg)**
 - N = 158 grips
 - **21.5%** increase in WHA (finger strength)
- After **multiple**, 4-week training phases (8-10 workouts)
 - Avg increase = **38.3 lbs (17.4kg)**
 - N = 73 grips
 - **32.0%** increase in WHA (finger strength)

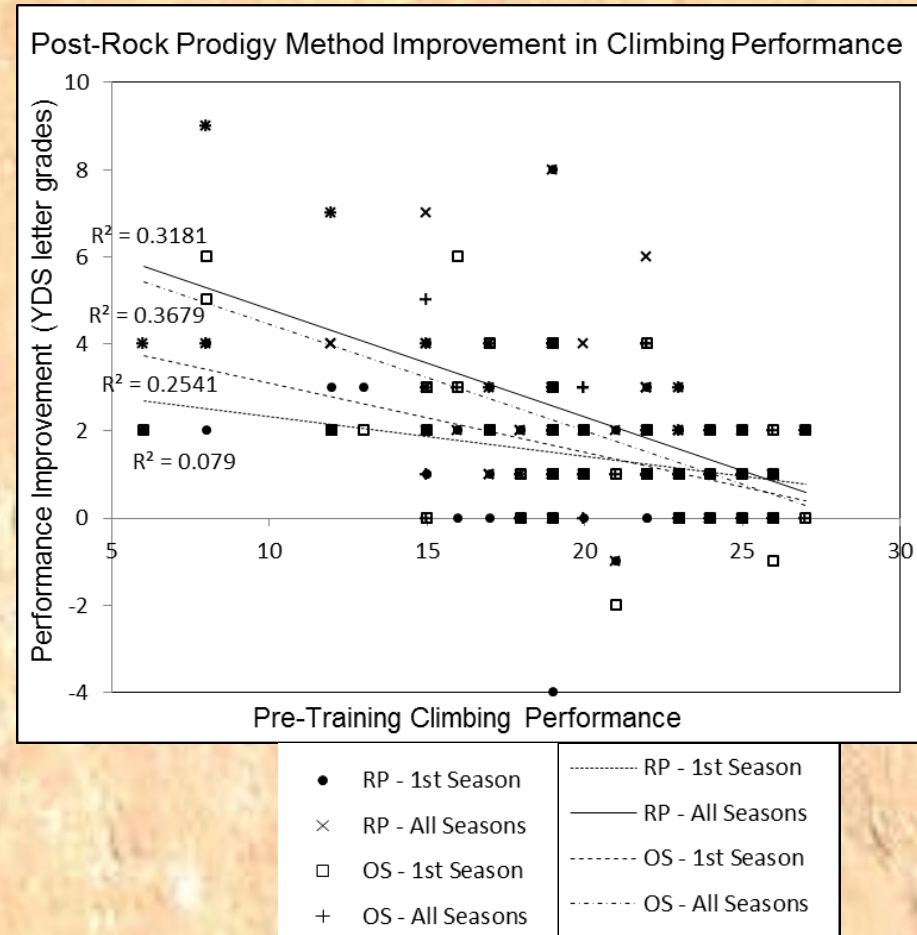
Conclusion: The RP Training Center and RP Method are effective at improving finger strength in experienced rock climbers.



Results – Rock Climbing Performance Improvements

- *Rock Prodigy Method*

- Performance quantified by YDS grade
- Reporting hardest climb performed following training
 - Compared w/-pre-training baseline
- After **one**, 12-week training cycle:
 - Avg “red-point” change = **+1.44** YDS grades, N = 75
 - Avg “on-sight” change = **+ 1.51** YDS grades, N = 70
- After **multiple**, 12-week training cycles:
 - Avg “red-point” change = **+2.50** YDS grades, N = 61
 - Avg “on-sight” change = **+ 2.03** YDS grades, N = 60
- **95.3%** reported improvement (N = 107)

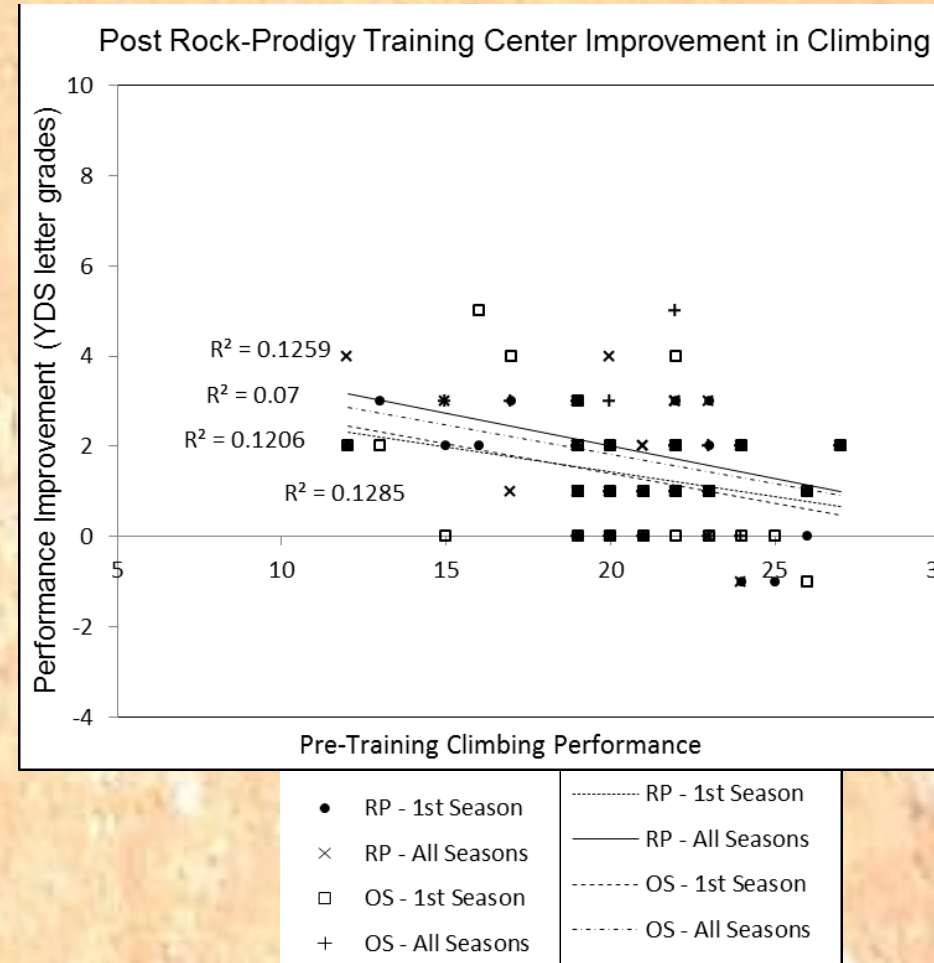


Conclusion: The RP Method is effective at improving rock climbing performance.

Results – Rock Climbing Performance Improvements

- *Rock Prodigy Training Center*

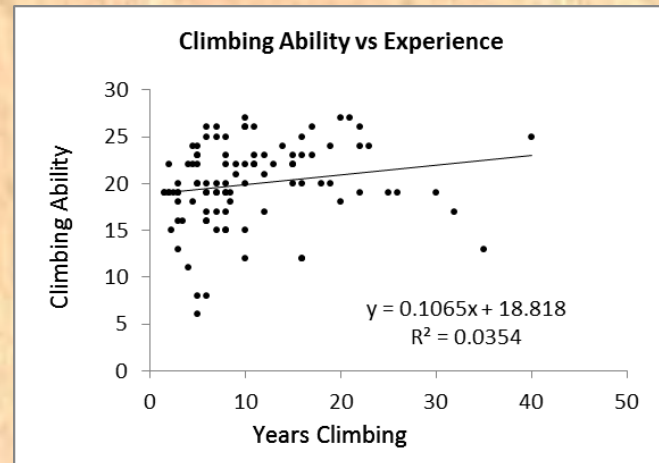
- Performance quantified by YDS
- Reporting hardest climb performed following training
 - Compared w/-pre-training baseline
- After **one**, 12-week training cycle:
 - Avg “red-point” change = +1.35 YDS grades, N = 31
 - Avg “on-sight” change = + 1.29 YDS grades, N = 38
- After **multiple**, 12-week training cycles:
 - Avg “red-point” change = +1.96 YDS grades, N = 27
 - Avg “on-sight” change = + 1.72 YDS grades, N = 32
- **92.3%** reported improvement (N = 65)



Conclusion: The RP Training Center **is effective** at improving rock climbing performance.

Discussion Points

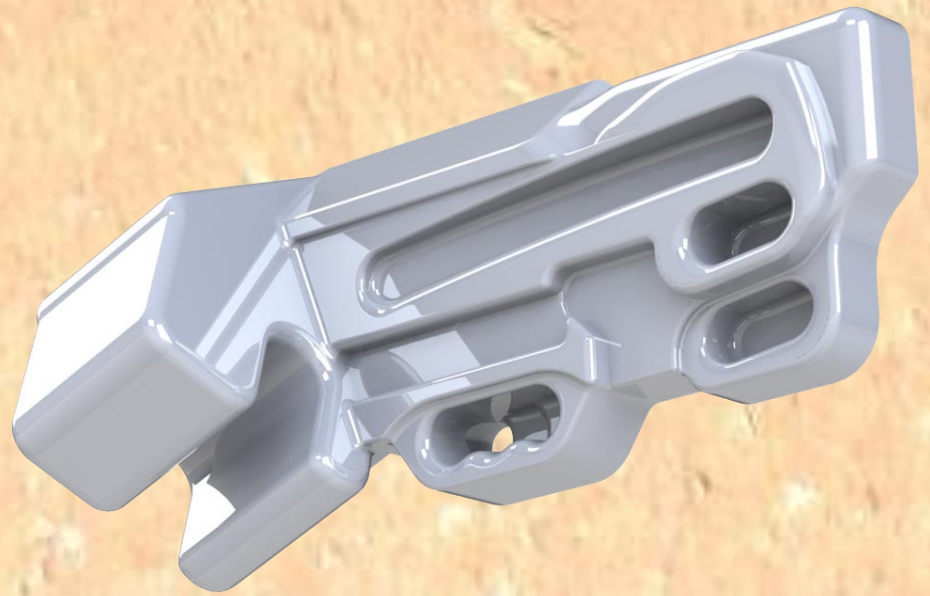
- Study yielded dramatic improvements
 - Long-term improvement is rare in climbing
- Climbers are relatively *under-trained* compared to typical athletes
 - Climbers don't typically follow systematic training programs
 - RPM is very prescriptive, easy to follow, results are motivating
- 74% of users reported fewer injuries (24% "not sure")



| To what extent did each element contribute to your improvement? | N/A (No Improvement) | Not at All | Slightly | Significantly | N |
|--|----------------------|------------|----------|---------------|----|
| The synergy of the RPTM periodization creates a performance peak: | 7% | 4% | 38% | 51% | 71 |
| A defined training schedule made it easier to follow the training protocol: | 0% | 0% | 3% | 97% | 74 |
| Goal setting helped me ID weaknesses, focus my training, and/or adhere to the program: | 3% | 5% | 34% | 58% | 74 |
| The exercises allow better control over training frequency, intensity, and rest: | 0% | 0% | 13% | 87% | 75 |
| A framework for documenting my results (quantifiable improvement was motivating): | 0% | 1% | 22% | 77% | 74 |
| The RPTM provided a practical framework for skill development: | 7% | 15% | 57% | 22% | 74 |
| Improved weight management: | 17% | 24% | 39% | 21% | 72 |
| Performance concepts of the RPTM improved my effectiveness at the crag: | 14% | 12% | 44% | 30% | 73 |
| Hangboard weight addition/subtraction w/pulleys allows me to tune training intensity: | 4% | 1% | 4% | 90% | 73 |
| The RPTC provides more effective grips to train on than other devices: | 31% | 1% | 22% | 45% | 67 |
| The RPTC's improved ergonomics allow me to push myself harder: | 28% | 3% | 34% | 35% | 68 |
| The RPTC provides a progression of grips of increasing difficulty: | 28% | 1% | 22% | 49% | 69 |

Future Work

- Continue to long-term study of:
 - Hangboard training
 - Rock Prodigy Method
 - Rock Prodigy Training Center
- RPTC provides:
 - Standardized Training Tool
 - Standardized Evaluation Tool
 - Enables wide-ranging subjects
- Continue Hangboard Improvements:
 - Advanced CAD/CAM techniques
 - 3D Printing for grip design optimization
 - Cooling, Force Sensing



Extra

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Climbing Grades

