

Purpose

To analyze pre-existing data over the last 25 years to determine the nutritional and physical requirements for adult rock climbers.

Methods

- The Tennessee Technological University Library Database, Eagle search, and Google Scholar were used to search for research literature used in this study.
- The search was narrowed down to peer-reviewed articles within the last 25 years.
- Keywords that were used are: climbing, indoor, nutrition, diet, adults, body composition, nutrient intake, sport climbing, and several others.
- Twenty-five years of research was used due to the lack of research articles and studies available on this topic .
- The goal was to be as specific as possible while trying to gather as many literature papers that were out there about climbing and the nutritional demands for climbers as possible.

Practical Application

- Rock climbing is a dangerous sport where having an unmet nutrition or hydration level can lead to injury or death.
- Climber's should assess their body composition goals, climbing venues, training phases and their discipline level to determine their nutritional requirements.



Discussion

• Body Composition

- 20 men and 20 women volunteered via social media
- Had to be >18 years old
- >2 years of climbing experience
- Climb at least 2 times/week
- Weighed to the nearest 0.1 kilogram
- Height measured to the nearest 0.1 cm
- Body composition was measured using the International Society for the Advancement of Kinanthropometry (ISAK).
- ISAK is an 8 skinfold test used to measure thickness of each skinfold to the nearest 0.2 mm.

• Energy Expenditure

- Large physical demand on forearm flexors and hands
- Increase blood lactate concentration.
- Energy values that were output were similar to those of running on a horizontal surface at speeds of 10:30, 10:15, and 8:00 minutes/mile depending on the climber.
- Average climber spends 10-11 kcalories per minute under normal circumstances.
- A higher degree angle increases the amount of calories burnt per minute.

Nutritional Risk and Requirements

• Hydration

- Leanness is encouraged
- Climbers are at a high risk of obtaining an eating disorder due to the lack of knowledge of how to correctly fuel their body
- Climbers often have a dehydration level of 2 -4% of their body weight causing a decreased performance.
- A carbohydrate mouth rinse solution is often encouraged to replenish electrolytes.
- Hydration helps to reduce soreness

• Carbohydrates

- Recommended that climbers get 3-7grams per kilogram of body mass per day.
- Simple carbs that are easily digestible are recommended before and during an active climb to minimize gastrointestinal distress and maximize fuel availability.
- Recovery levels are recommended to be at 0.8 – 1.2 g/kg of body mass per hour of exercise coupled with 3 g/kg of body mass of protein

• Fats & Proteins

- Not enough research done to accurately determine levels for these macronutrients, but can be concluded that it should be higher than normal levels.

• Micronutrients

- They are often overlooked due to a hyper-focus on macronutrients
- Biochemical exams can be done to determine appropriate levels for each individual.
- Climbers are often recommended to take vitamin D as it increases muscle function, strength, and balance.
- Climbers are also recommended to digest vitamin B as it acts as an intermediate for carbohydrate metabolism.



Limitations

- Limited prior research to go off of.
- Customary 10 year research limit had to be expanded to 25 years to acquire enough data.
- All test were completed using climbers on higher difficulty levels of climbs

Conclusion

- Exact nutritional requirements were unable to be obtained due to lack of research.
- It is certain that higher levels of both macro and micronutrients should be consumed compared to average daily activities in life.
- Climbers unintentionally put themselves at higher risk for eating disorders.
- Beneficial to have a lean physique to allow for maneuvering around difficult holds.
- While climbers need to consume a lot of carbohydrates, they do not need to consume as many as most athletes

