

The Effects of Creatine Supplementation on Muscle Mass in Female Bodybuilders

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Abstract

Bodybuilding is typically known as a man's sport but recently women have gained a lot of attention within the sport. Since women are physiologically built differently from men the way and rate they gain muscle can be different. However, there are products on the market that have been shown to increase muscle mass at a faster rate when supplemented with it. One of these products is known as creatine monohydrate. This study sought to research if creatine monohydrate can improve the muscle mass of female bodybuilders. Past studies have focused mainly on the effects and results males have experienced when supplementing creatine monohydrate. Female bodybuilders with one year of experience were tested over a six-week trial. They were split into two groups: a creatine group and a placebo group. They were provided creatine or placebo, meal plans, and workout plans to ensure consistency in the results. Body composition, weight, and body measurements were analyzed weekly. Once the results were measured, they were analyzed to determine if the creatine group showed a faster increase in muscle mass when compared to the placebo group.

The Purpose Statement

- The aim of this study was to determine if supplementing with creatine monohydrate increases the rate in which muscle mass develops in female bodybuilders.
- It was hypothesized that creatine monohydrate would result in a faster growth of muscle mass in female bodybuilders.

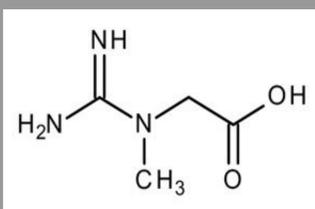
Operational Definitions

Creatine Monohydrate: is a combination of three types of amino acids: glycine, arginine, and methionine. This compound allows our body to create more energy in muscle cells allowing muscles to work harder and longer.

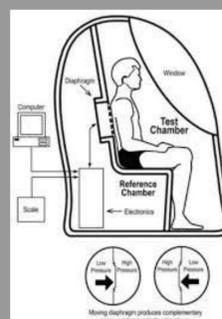
BOD POD: Machine used to take measurements of lean muscle mass using air-displacement plethysmography

Bodybuilding: can be defined as a sport that involves rigorous training in order to strengthen muscle to create the perfect physique.

Muscle Mass: can be defined as the size of the muscle



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Methods

Participants (N=50)

- Volunteers signed up at The Arnold Classic Bodybuilding Competition
- Female Bodybuilder with one year of bodybuilding experience
- Age range from 20 years to 40 years.
- No creatine consumption for the past six months

Groups

- Group 1: creatine 25 Females
- Group 2: Placebo 25 Females

First Visit

Participants signed informed consent and initial measurements of muscle mass, body weight, and body measurements of the thigh and arm were taken.

Supplementation Protocols

- Meal Plan: Individualized based on age, weight, and height. Required to keep a food diary
- Workout Plan: 6-day bodybuilding plan
- Creatine dosage: 5g taken pre-workout everyday

6-Week Trial

Check-ins occurred once a week to take measurements and check food diary.

Final

Final measurement was taken, and data was placed into SPSS for analyzing.

Review of Literature

Jagiello and authors (2010):

- The purpose of this study was to test if supplementing with creatine for 6 weeks would increase body mass and muscle circumferences in male bodybuilders.
- (N=14), male, 16-29 years old
- Girths for chest, waist, arm, forearm, thigh, and calf were measured
- The results indicated an increase in the overall muscle mass and muscle girth

Tucker and authors (2014):

- The purpose of this study is to determine if the BOD POD is a reliable in measuring body fat percentage and fat free mass.
- (N=283) women, 3 hours fasted
- Height, weight, and body fat percentage was measured.
- After 2 separate test the results showed a slight difference was 1% between the two. The correlation between the two tests was .991.

Discussion

Implications:

The results of this study may indicate supplementing creatine monohydrate increases muscle mass. This will allow female bodybuilders to add creatine monohydrate to their daily supplementation routine.

Limitations:

One of the major limitations of this study was providing participants with meal plans and having them fill out a weekly food diary. One major issue with this is participants may not be completely honest. Individuals may also be unaware of how to correctly measure portion size and the correct amount to eat. Another limitation of this study is using females as the participants. Females may be a difficult population to measure. Factors such as menstrual cycles can impact the results in a study. Another limitation to the study is creatine timing. This study focuses on taking creatine pre workout. This study fails to test taking creatine a different time throughout the day.

Future Research

Since most research on creatine is done on the male population this study opens the door for future researchers to focus on females.

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