Aug 30, 2022

Effects of the ketogenic diet on muscle hypertrophy in re-sistance-trained men and women: a systematic review & me-ta-analysis

DOI
dx.doi.org/10.17504/protocols.io.4r3l27m9qg1y/v1

Salvador Vargas Molina[1], José Luis Gomez Urquiza[2], Jerónimo García Romero[3], Javier Benítez Porres[3]
[1]EADE-University of Wales Trininty Saint David; [2]University of Granada; [3]University of Malaga

Salvador Vargas Molina

DOI: https://dx.doi.org/10.17504/protocols.io.4r3l27m9qg1y/v1

Protocol Citation: Salvador Vargas Molina, José Luis Gomez Urquiza, Jerónimo García Romero, Javier Benítez Porres 2022. Effects of the ketogenic diet on muscle hypertrophy in re-sistance-trained men and women: a systematic review & me-ta-analysis. **protocols.io https://dx.doi.org/10.17504/protocols.io.4r3l27m9qg1y/v1**

Protocol status: Working
We use this protocol and it's working

Created: August 29, 2022

Last Modified: August 30, 2022

Protocol Integer ID: 69319

Keywords: ketogenic diet without programmed energy restriction, effect of the ketogenic diet, effects of the ketogenic diet, ketogenic diet, resistance training, increases in fat, muscle hypertrophy, conjunction with resistance training, fat, free mass, trained participant, trained men

Abstract

Reviews focused on the ketogenic diet (KD) based on the increase in fat-free mass (FFM) have been carried out with pathological populations or, failing that, without population differentiation. The aim of this review and meta-analysis was to verify whether a ketogenic diet without programmed energy restriction generates increases in fat-free mass (FFM) in resistance-trained participants.We evaluated the effect of the ketogenic diet, in conjunction with resistance training, on fat-free mass in trained participants. Boolean algorithms from various databases (PubMed, Scopus and Web of Science).

Troubleshooting

1 Effect of the ketogenic diets on muscle hypertrophy in resistance-trainined men and women: a systematic review & meta-analysis

Citation

Salvador Vargas-Molina, José Luis Gómez-Urquiza, Jernónimo García-Romero, Javier Benítez-Porres. Effects of the ketogenic diets on muscle hypertrophy in resistance-trained men and women: a systematic review & meta-analysis.

Review Question
PICO (S) asks: "Population" resistance-trained male participants" "Intervention": "training protocol and ketogenic diets; "Control" "Group that did not ketogenic diet". Results: "increased fat free mass or muscle tickness; "Studies": "randomized controlled studies".

Searches
The scientific literature search was performed in electronic databases PubMed, Web of Sciences(WOS) ans SCOPUS.

The search consisted of keywords related ("ketogenic diet" OR "Ketogenic dieting" OR "Los carbohydrate diet") AND ("Body composition" OR "fat free mass" OR "lean body mass" OR "LBM" OR "ultrasound") AND ("resistance training" OR "Strength training" OR "muscle" OR "muscle mass" OR "hypertrophy" OR "training hypertrophy" OR "trained men" OR "training males" OR "trained women")

Types of study
Systematic review & meta-analysis

Condition or domain being studied
Impact on muscle hypertrophy by the application the ketogenic diets in resistance trained participants

Participants/Populations
Resistance-trained participants (men a women)

Intervention (s)/exposure
Aplicattion of ketogenic diets with resistance-training

Comparator (s)/Control
Control group performs the same physical exercise and consumes the same calories, however, does not restrict carbohydrates

Context
Advanced participants with application of ketogenic diet and resistance training simultaneously

Main (Outcome)
Maintenance or increase of fat-free mass

Meassure of effect
Not applicable

Additional outcomes
None

Measures of effect
Not applicable

Data extraction (selection and coding)
Studies were searched and analyzed by two independent reviewers (S.V.M and J.B.P). The articles found were coded using the Endnote reference manager, and discrepancies regarding the interprepatinon of the extracted data were discussed by both researches. In addition, the articles were filtered using the inclusion criteria: a) randomized trials, with a minimum duration of 8 weeks; b) the use of a KD in resistance-trained participants, competitors or elite athletes; c) evaluation of body composition by means of DXA, bioimpedance or ultrasound; d) data presented as means and standard deviations; e) no interventions using nutritional or dietary supplements; and f) the text was in English and available in full.

The articles were selected according to their title and abstract. Articles that did not meet the inclusion criteria were discarted. In the second phase, the entire article was read and analyzed. Information was extracted from the articles on the numbre of participants, the type and duration or interventions, and characterictics of the population.

Risk of bias (quality) assesment
The risk of bias assesment will be carried out following the recommendations of the Cochrane Collaboration. For each study, seven domains were scored with high, low or unclear risk of bias. These domains were: sequence generation, allocation concealment, blinding of participants and staff, blinding of outcome assesment, incomplete outcome data, selective outcome reporting, and other issues considered.

Strategy for data synthesis

To perform this meta-analysis, the effect the ketogenic and non-ketogenic diet was analyzed as a control group. Both gropus performed strength exercises. Data were extracted using the mean and standard deviation (numerical values) presented after the intervention.

The results or this meta-analysis were presented with mean differences (MD) and 95% confidence intervan (CI). Heterogneity was also present, estimated by measuring its extent by the I2 index. The authors examined the P value for this stastics and noted the presence of heterogeneity when P<0.05, compromising the validiity of the pooled estimates. In addition, the i2 inex considered low heterogeneity (0-40%), moderate (30-60%), considerable (50-90%) o substantial (75-100%).

Review team members and their organisational affiliations
Salvador Vargas Molina (EADE-University of Wales Trinity Saint David, Málaga Spain; University of Malaga, Málaga, Spain). José Luis Gómez Urquiza (University of Granada, Granada, Spain). Jerónimo García-Romero (University of Malaga, Málaga, Spain). Javier Benítez-Porres (University of Malaga, Málaga, Spain).

Type and method of review
Meta-analysis, Systematic review

Anticipated or actual start date
15 August 2022

Anticipated completion date
30 September 2022

Funding sources/sponsors
No funding

Conflicts of interest
There are not conflicts of interest

Language
Engilish

Country
Spain

Stage of review
Review ongoing

2