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Beta-hydroxy-beta-methylbutyrate free acid improves resistance training-induced muscle mass and function: a systematic review

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Citation

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Review question(s)

What is the effect of HMB-FA on resistance training-induced muscle mass and function?

Searches

A literature search was performed in PubMed and the Google academic databases.

In addition, a manual search of the literature was also performed.

The search was restricted to research conducted on humans and published in the English language only.

Types of study to be included

Randomized and placebo-controlled studies and two-arm studies conducted on humans only.

Condition or domain being studied

HMB is a leucine metabolite, described as a potent nutritional supplement, which has effects on muscle recovery and tissue damage, strength and lean body mass. In addition, HMB plays an anti-catabolic effects.

Participants/ population

Randomized, placebo-controlled and two-arm studies (with humans only) that analyzed the effects of HMB on exercise training were considered eligible.

Intervention(s), exposure(s)

We will evaluate articles that investigated HMB supplementation effects on resistance training.

Exclusion criteria were: subjects with chronic diseases involving patients with overweight-induced metabolic consequences.

Inclusion criteria were: men and women subjected to exercise protocols.

Comparator(s)/ control

Studies comparing the effects of HMB supplementation with placebo in subjects who were subjected to acute or exercise training.

Outcome(s)

Primary outcomes

Effects on skeletal muscle in sedentary, active and recreationally-trained subjects and HMB-supplemented compared with placebo.

Change in lean mass from baseline to final intervention.

Change in strength and biochemical parameters from baseline to final intervention.

Secondary outcomes

None.

Data extraction, (selection and coding)

Two authors independently evaluated all published studies relating to HMB and exercise by assessing titles and abstracts. The full texts of any potentially relevant articles published in the two abovementioned databases (PubMed and Google academic databases) were then assessed for inclusion, and any disagreements regarding eligibility were resolved by debate.

Risk of bias (quality) assessment

Two systematic review authors assessed the risk of bias in included studies by considering the following characteristics:

- Quality of randomisation: by age and training status.
- Study controls: with placebo.
- Blinding: was there sufficient blinded to the intervention allocation?
- Summary tables: checked with the latest trial report by the third review author.

In addition, disagreements between the two reviewers authors over risk of bias were resolved by discussion, with the involvement of a third review author.

Strategy for data synthesis

We will provide a narrative synthesis of the findings from the included studies, structured around of the HMB intervention, target population characteristics and exercise type. We will provide summaries of intervention effects with HMB on resistance training-induced muscle mass and function for each study.

Analysis of subgroups or subsets

None planned.

Dissemination plans

A paper will be submitted to a leading journal in this field.

Contact details for further information

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Anticipated or actual start date

06 October 2015

Anticipated completion date

01 September 2016

Funding sources/sponsors

No funding.

Conflicts of interest

None known

Language

English

Country

Brazil

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Exercise; Humans; Muscle Strength; Musculoskeletal System; Resistance Training; Valerates

Stage of review

Ongoing

Date of registration in PROSPERO

28 June 2016

Date of publication of this revision

28 June 2016

Stage of review at time of this submission

Preliminary searches

Started

No

Completed

Yes

Piloting of the study selection process

No

Yes

Formal screening of search results against eligibility criteria

Yes

No

Data extraction

Yes

No

Risk of bias (quality) assessment

Yes

No

Data analysis

Yes

No

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