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Study of acute ATP supplementation to increase athletic performance

Submission date	Recruitment status	[_] Prospectively registered
07/07/2021	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
08/07/2021	Completed	[X] Results
Last Edited	**Condition category**	[_] Individual participant data
05/01/2022	Nutritional, Metabolic, Endocrine	

Plain English summary of protocol

Background and study arms
Acute ATP supplementation has been shown to increase athletic performance, but the minimal effective and optimal doses are currently unknown. This study investigates the effects of three different doses of ATP (400 mg, 200 mg, and 100 mg) on exercise performance.

Who can participate?
Healthy men with at least 1 year of resistance training experience.

What does the study involve?
The study involves four training sessions of four sets of resistance training exercises separated by one week each. Participants are randomly allocated to consume either 100 mg, 200 mg, or 400 mg of ATP or a matching placebo (maltodextrin) 30 minutes before the resistance exercise tests. The total number of repetitions performed for each set is used to analyze performance, and perceived exertion is measured at the end of each session of exercise using a 0 to 10 point scale.

What are the possible benefits and risks of participating?
Any exercise includes the risk of injury. The risk of injury is reduced by appropriate warm-ups, familiarization with the exercise and supervision through trained personnel.

Where is the study run from?
Federal University of Piauí (UFPI) (Brazil)

When is the study starting and how long is it expected to run for?
January 2019 to April 2021

Who is funding the study?
TSI Group, Ltd (USA)

Who is the main contact?
Prof. Dr. Fabrício E. Rossi
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Contact information

Type(s)
Scientific

Contact name
Prof Fabricio Rossi

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Additional identifiers

Protocol serial number
AcuteATPBrazil19

Study information

Scientific Title
Dose-ranging study of acute ATP supplementation to improve athletic performance

Acronym
AcuteATPPerformance

Study objectives
Acute supplementation with 400 mg ATP 30 minutes prior to exercise has been shown to increase athletic performance. However, the optimal and minimal effective dose of ATP to increase exercise performance is currently unknown. Therefore, this study aims to assess the effect of different doses of acute ATP disodium supplementation on exercise performance compared to placebo.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 26/02/2019, the ethics committee of the Federal University of Piaui (Ministro Petrônio Portella Campus, Ininga, Terezina –PI, Brazil; +55 (86) 3237-2332; cep.ufpi@ufpi.br), ref: 3.169.545

Study design

Double-blind placebo-controlled randomized crossover multiple-dose single-center interventional trial

Primary study design
Interventional

Study type(s)
Other

Health condition(s) or problem(s) studied
Sports nutrition

Interventions
Subjects complete five experimental trials, each separated by 1 week. All trials are performed at the same time (morning) to ensure chronobiological control and are separated by a week. The one rep maximum (1RM) test for half-squats is determined during the first visit. On the following four visits, each subject randomly consumes either 100 mg, 200 mg, or 400 mg of ATP (PEAK ATP®, TSI USA LLC, Missoula, MT, USA) or a matching placebo (maltodextrin). The supplement or placebo is ingested 30 minutes prior to the resistance exercise tests. After that, the participants complete four sets of half-squats until momentary muscular failure with a load corresponding to 80% of the 1RM and 2 minutes of rest between sets. The total number of repetitions performed is recorded for each set and is used to analyze performance and the rate of perceived exertion is measured at the end of each session of exercise using the 0 to 10 point scale.

Intervention Type
Supplement

Primary outcome(s)
1. Number of set 1 repetitions (n) of half-squats until momentary muscular failure with a load corresponding to 80% of the 1RM, recorded by researchers at visits 2, 3, 4 and 5
2. Number of set 2 repetitions (n) of half-squats until momentary muscular failure with a load corresponding to 80% of the 1RM, recorded by researchers at visits 2, 3, 4 and 5
3. Number of set 3 repetitions (n) of half-squats until momentary muscular failure with a load corresponding to 80% of the 1RM. recorded by researchers at visits 2, 3, 4 and 5
4. Number of set 4 repetitions (n) of half-squats until momentary muscular failure with a load corresponding to 80% of the 1RM, recorded by researchers at visits 2, 3, 4 and 5
5. Number of total repetition (n) of half-squats until momentary muscular failure with a load corresponding to 80% of the 1RM, calculated from the sum of set 1, 2, 3, and 4 repetitions at visits 2, 3, 4 and 5
6. Total weight lifted (kg) calculated from the total repetition and the individual 1RM at visits 2, 3, 4 and 5
7. Rate of perceived exertion measured using the visual analogue score (VAS) at visits 2, 3, 4, and 5

Key secondary outcome(s))
There are no secondary outcome measures

Completion date
30/04/2021

Eligibility

Key inclusion criteria
1. Age 18–35 years
2. Male
3. Healthy and free of disease (as reported by the health screening questionnaire)
4. Physically active with at least 1 year of resistance training experience at a frequency of 3 days per week and 60 minutes per day and a relative 1RM of 1.5 to 2.0 kg/body weight

Participant type(s)
Healthy volunteer

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
35 years

Sex
Male

Total final enrolment
24

Key exclusion criteria
1. Any individual diagnosed with or being treated for cardiac, respiratory, circulatory, musculoskeletal, metabolic, obesity (defined as body mass index >30 kg/m² and body fat greater than 30%), immune, autoimmune, psychiatric, hematological, neurological, or endocrinological disorder or disease were not allowed to participate in the current study.
2. Not used any dietary supplements for at least 6 months before the study
3. Not use any other ergogenic substances or supplements during the study
4. No change in their regular diet and exercise patterns
5. No caffeine consumption 12 hours before each experimental test.

Date of first enrolment
01/03/2019

Date of final enrolment
28/02/2021

Locations

Countries of recruitment
Brazil

Study participating centre
Universidade Federal do Piauí (UFPI)
Immunometabolism of Skeletal Muscle and Exercise Research Group
Laboratory of Muscle Performance
Department of Physical Education
UFPI Campus Universitário Ministro Petrônio Portella
Teresina, Piauí
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Sponsor information

Organisation
TSI Group, Ltd

Funder(s)

Funder type
Industry

Funder Name
TSI Group, Ltd

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated during and/or analysed during the current study are/will be available upon request from Prof. Dr. Fabrício E. Rossi (fabriciorossi@ufpi.edu.br). Based on the inquiry, the purpose for the inquiry and the intended use, Prof. Rossi will decide what to share at that point.

IPD sharing plan summary
Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		08/12/2021	05/01/2022	Yes	No