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Effects of winter exercise and the healing climate of caves on people with allergies and asthma

Submission date
25/01/2019

Recruitment status
No longer recruiting

Registration date
06/02/2019

Overall study status
Completed

Last Edited
22/03/2023

Condition category
Respiratory

[ ] Prospectively registered
[ ] Protocol
[ ] Statistical analysis plan
[ ] Results
[ ] Individual participant data
[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
The prevalence of allergic rhinitis (hay fever) and asthma has increased during the last decades. Therefore, allergies have become an enormous economic burden. Allergic diseases influence the quality of life of patients negatively, and in particular quality of sleep is impaired, which is leading to daytime sleepiness, reduced work productivity and worse school performance. The conservative treatment of allergic includes several drugs like antihistamines, bronchodilators and glucocorticoids. Next to this, travels to and/or stays at high altitude have a long tradition in the therapy of asthma and have been described to have positive long-term effects. Another natural treatment method for allergies and asthma is the so-called speleotherapy. Speleptherapy uses the specific microclimate of old mines and caves to treat respiratory diseases. Although, physicians very often recommend regular exercise for patients with allergies and asthma, scientific evidence and evidence-based guidelines are lacking about recreational winter exercise. The aim of this study is to assess the effects of winter exercise and of speleotherapy in combination with winter exercise on patients with allergies and asthma.

Who can participate?
Men and women aged 18-55 with a house dust mite allergy and controlled allergic rhinitis and/or allergic asthma, and moderate skiing skills to meet the demands of the winter exercise program.

What does the study involve?
Participants are randomly allocated into three groups: a control group and two intervention groups (speleo- and exercise group). The intervention groups spent a 10-day winter holiday in the holiday region National Park Hohe Tauern (Austria). The exercise group participated in a whole-day winter sports program and the speleo group spent 1.5 hours every day in a mine and participated in half-day winter sports program. Medical examinations (lung function, blood tests, endurance etc) are performed at the beginning of the study, after the 10-day holiday and after 2 months.

What are the possible benefits and risks of participating?
The direct benefit for the participants is a ten-day winter holiday with exercise and/or speleo

therapy. A vacation improves mood and quality of life. As a negative side effect of physical activity, exercise-induced bronchoconstriction (constriction of the airways) may occur.

Where is the study run from?
The Paracelsus Medical University of Salzburg performed this study. All medical examinations were performed by members of the Institute of Ecomedicine from the Paracelsus Medical University of Salzburg. The speleo and exercise program took place in region National Park Hohe Tauern (Austria), the control group receive no intervention and stay at home (Austria).

When is the study starting and how long is it expected to run for?
Intervention group with winter exercise and speleotherapy & control group: March-May 2013
Intervention group with winter exercise: December 2013- February 2014

Who is funding the study?
This research was funded by Lighthouse projects in tourism award 2011 “Year-round destination Hohe Tauern Health", Winner of the 1st price, Austrian Federal Ministry of Economic Affairs, Family and Youth

Who is the main contact?
Dr Arnulf Hartl

Contact information

Type(s)
Scientific

Contact name
Dr Arnulf Hartl

Contact details
Strubergasse 22
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5020

Additional identifiers

Protocol serial number
415-E/1553/2-2012

Study information

Scientific Title
Winter exercise and speleotherapy for allergy and asthma - the WESPAA study

Acronym
WESPAA

Study objectives

Winter exercise and winter exercise in combination with the healing climate of mines/caves (speleotherapy) improve allergic airway inflammation in adults suffering from allergic rhinitis and /or allergic asthma.
Winter exercise and winter exercise in combination the healing climate of mines/caves improve health related quality of life in adults suffering from allergic rhinitis and/or allergic asthma.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Ethics Committee of Salzburg, Amt der Salzburger Landesregierung, Postfach 527, 5010 Salzburg, Tel: +43 (0)662 8042 2375, Email: ethikkommission@salzburg.gv.at, 15/11/2012, ref: E1987/5-2016

Study design
Randomized controlled trial

Primary study design
Interventional

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Allergy, asthma, respiratory allergies, house dust mite allergy

Interventions
The intervention groups spent a 10-day winter holiday in the Holiday region National Park Hohe Tauern (Austria). The exercise group participated in a whole-day winter sports program and the speleotherapy group spent every day 1.5h in a mine and participated in half-day winter sports program. The control group did not received any intervention.

Intervention Type
Mixed

Primary outcome(s)
Measured at baseline (day 0), day 10 and day 60:
1. Allergic airway inflammation assessed using exhaled nitric oxide
2. Health related quality of life assessed using RhinAsthma Quality of Life Scale

Key secondary outcome(s))
Measured at baseline (day 0), day 10 and day 60:
1. Inflammation/allergic inflammation assessed using differential blood count
2. Cardiorespiratory fitness assessed using the 6-Minute Walk Test
3. Lung function assessed using spirometry
4. Allergic inflammation in the upper airways assessed using eosinophilic cell count from nasal lavage
5. Cleaning rate of the upper airways assessed using mucociliary clearance (saccharin test)
6. Allergic symptoms and health status assessed using the Visual Analogue Scale
7. Chronic stress level assessed using the Trierer Inventory for chronic stress (TICS)

8. General health/health-related quality of life assessed using SF-36
9. Asthma control status assessed using Asthma Control Test
10. Health related quality of life for asthma assessed using Asthma Quality of Life Questionnaire
11. Disease-specific health related quality of life assessed using Sinonasale Outcome Test

Completion date
28/02/2014

Eligibility

Key inclusion criteria
1. Age between 18-55 years
2. House dust mite sensitization (RAST > 2; positive PRICK-Test or total IgE > 0.7 kU/l)
3. Controlled allergic rhinitis and/or allergic asthma
4. Physical ability, including moderate skiing skills, to meet the demands of the exercise program

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 years

Upper age limit
55 years

Sex
All

Key exclusion criteria
1. Uncontrolled asthma (Asthma Control Test < 20)
2. Malignant neoplastic disorders
3. Exercise induced bronchoconstriction
4. Cardiovascular diseases
5. Orthopedic diseases
6. Lung function disorder
7. Acute infection or fever
8. Uncontrolled metabolic diseases
9. Pregnancy

Date of first enrolment
19/11/2012

Date of final enrolment
15/02/2013

Locations

Countries of recruitment
Austria

Germany

Study participating centre
Paracelsus Medical University Salzburg
Institute of Ecomedicine
Strubergasse 22
Salzburg
Austria
5020

Sponsor information

Organisation
Paracelsus Medical University

ROR
https://ror.org/03z3mg085

Funder(s)

Funder type
Government

Funder Name
Austrian Federal Ministry of Economic Affairs, Family and Youth

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 Dr Arnulf Hartl (arnulf.hartl@pmu.ac.at). Data will be shared after publication; data will be shared for meta-analysis, data will be shared upon request via e-mail; data will be shared only for research purpose; consent from participants was obtained; no ethical or legal restrictions.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Interim results article	Subsection of data	08/06/2019	22/03/2023	Yes	No
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes