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Informed Consent Form

Official Study Title:
Influence of Edible Marijuana on Endurance Exercise Performance

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ADULT PARTICIPANT INFORMED CONSENT
Department of Health and Exercise Science

Study Title:
Influence of Edible Marijuana on Endurance Exercise Performance

PRINCIPAL INVESTIGATORS:
Christopher Bell, Ph.D., Associate Professor

GRADUATE AND UNDERGRADUATE STUDENT INVESTIGATOR(S):
Taylor Ewell, Kieran Abbotts, Matthew Bomar, and Hannah Butterklee

WHAT IF I HAVE QUESTIONS?
For questions or concerns about the study, you may contact Dr. Bell at 970-491-7522 (office) and christopher.bell@colostate.edu. For questions regarding the rights of research subjects, any complaints, or comments regarding the manner in which the study is being conducted, contact the CSU Institutional Review Board at: RICRO_IRB@mail.colostate.edu; 970-491-1553.

CONCISE STATEMENT OF STUDY
Lots of people, including athletes and people who like to exercise regularly, enjoy marijuana. Some people believe marijuana might improve their ability to exercise. There are no recent, up-to-date scientific studies to suggest that this belief is right or wrong. The goal of this study is to determine the influence of marijuana on exercise performance. You may be eligible to participate because you: (1) are an adult male or female that is aged 21-40 years, (2) weigh more than 110 Lbs, (3) have exercised, on average, 5 or more days per week during the previous year, (4) have used cannabis products, including marijuana, an average of once or more per month during the previous year, and (5) have used a cannabis product containing a minimum of 10 mg of Δ9-tetrahydrocannabinol (also known as THC) without an adverse reaction. THC is the ingredient in marijuana that changes the way you feel. This study will require 5 sessions, the first 3 sessions will take place in our lab, the final 2 at a venue of your choosing. The total number of hours for participation will be approximately 6 ½ hours, and these will be spread over approximately 5 weeks. Participation in the study will require lots of cycling exercise, and one session of cycle exercise after swallowing marijuana. There are some risks to participating in this study, such as using marijuana, the discomfort of having blood sampled from a vein, exposure to low strength X-rays, and discomfort/risks associated with difficult exercise. We hope that this research will benefit our understanding of how edible marijuana might influence exercise performance. You can find more details on this study in the body of this consent form. If you are interested in continued discussion about the presentation, we would like to discuss more with you through this consent presentation.

WHAT IS THE PURPOSE OF THIS STUDY?

- Lots of athletes and exercisers use marijuana.
- Many athletes appear to believe consuming marijuana prior to exercise will improve exercise performance.
- There is very little scientific evidence describing the influence of marijuana on exercise performance.
- The most relevant studies on this topic were completed 35-45 years ago and do not reflect modern marijuana behaviors nor do they utilize modern, sensitive physiological instruments

The purpose of this study is to determine the influence of marijuana on exercise performance.

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?

You are being asked to participate in the study because you fit these criteria: (1) Age 21-40 years, inclusive. (2) You weigh more than 110 lbs (50 kg). (3) You are a habitual user of cannabis; your average use cannabis is minimum of once per month during the previous year. (4) You have previously used a cannabis product containing at least 10 mg of THC with no adverse reaction. (5) You are a habitual exerciser: you have exercised a minimum of 5 days per week, for a minimum of 30-minutes/session, during the previous year.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The study will take place in two locations. One location is the Human Performance Clinical Research Laboratory (HPCRL) in the Department of Health and Exercise Science on the Fort Collins campus of Colorado State University. The other location is a residential location of your choice. A residential location might be the house where you live, or the house of a friend or member of your family. The reason parts of the study will take place in a residential location is it is currently against the rules of Colorado State University to use marijuana on campus.

This study will require 3 visits to the HPCRL and 2 study sessions in the residential location. The first visit to the HPCRL will last 90 minutes. The second visit will last 60 minutes. The third visit will last 60 minutes. Each of the study sessions in the residential location will last approximately 60 minutes. The total number of hours for participation will be approximately 6 ½ hours, spread over approximately 5 weeks.

How Does COVID19 Influence Participation In This Study

Any interaction with people outside of your own home may increase your risk of becoming ill with Covid19. To promote your safety, and the safety of others in our research facility, you will be asked to do the following:

1) The day before your visit to the Human Performance Clinical Research Laboratory you will receive an email or text reminding you of your appointment. The reminder will also include a short list of questions specific to symptoms and behaviors linked to Covid19.

2) When you arrive at the Human Performance Clinical Research Laboratory you will be asked several questions specific to Covid19.

3) The day before the appointment in the residential location of your choosing, you will receive an email or text reminding you of your appointment. The reminder will also include a short list of questions specific to symptoms and behaviors linked to Covid19.

4) During the entire study, the researchers will wear a mask. You will also be asked to wear a mask. You will be asked to briefly remove your mask during some of the research procedures (detailed below). Whenever you are asked to remove your mask, you will not be within the vicinity of research staff; that is, the research staff may not be present in the room.

WHAT WILL I BE ASKED TO DO?
If you volunteer to participate in this study, you will be asked to do the following:

SIMPLE BIG DESCRIPTION
You will visit the Human Performance Clinical Research Laboratory on 3 different days. During the 1st visit you will complete brief questionnaires about your health, medical history, exercise habits and cannabis use, and you will undergo measures of body composition, and aerobic capacity. The next two visits will be identical and will involve low-to-moderate intensity cycle exercise, time trial tests (how fast you can ride a specific distance) and sprint tests on an exercise bike.

The 4th and 5th sessions taking place in the residential location will be very, very similar to the 2nd and 3rd visits to the lab and will involve low-to-moderate intensity cycle exercise, time trial tests (how fast you can ride a specific distance) and sprint tests on an exercise bike. On one day you will swallow marijuana. On the other day you will swallow a placebo. A placebo is something that has no physiological effect.

DETAILED DESCRIPTION
Visit 1: Initial Visit - Duration: Up to 90 minutes
Questionnaires
You will be asked to answer several questions related to your health, any illness you may have or have had, and medications you use or have used in the past. You will also be asked about your usual exercise habits and previous use of marijuana. (Duration: less than 30 minutes)

Pregnancy Test
If you are female, you will be required to have a sample of your urine tested for the presence of human chronic gonadotropin (HCG), a hormone that indicates whether you may be pregnant. This will require approximately 1 small cup of your urine. If you are pregnant or the test indicates that you are pregnant you will not be able to participate in this study. (Duration: 5 minutes)

Body Composition
We will measure how much fat you have in your body using a test called dual energy x-ray absorptiometry (DEXA). The DEXA test requires you to lie quietly on a padded table while a small probe gives off low-level x-rays and sends them over your entire body. This test gives very accurate measurements of your body fat and bone mineral density. We will also measure the circumference of your waist and hip using a tape measure. (Duration: less than 15 minutes)

Exercise Stress Test
You will be asked to perform a vigorous exercise test. This test will tell us if your heart is healthy. You will be asked to ride an exercise cycle (cycle ergometer) for approximately 10-15 minutes. The exercise will become a little more difficult every few seconds. While you are riding, we will measure your heart rate with an electrocardiogram (ECG) and your blood pressure with a cuff placed around your upper arm. We will also ask you to wear a nose clip (something that stops you breathing through your nose) and ask you to breathe through a mouthpiece. The mouthpiece/nose clip and mask will let us measure the gases you breathe and will allow us to calculate the highest rate of oxygen you can use while exercising. This value is known as your VO_{2max}.

<u>Visits 2 and 3 – Practice (Habituation) Visits (Each lasting 60 minutes)</u>
Visits 2, and 3 will be identical.
You will be asked to ride a stationary cycle ergometer at 3 low-to-moderate workloads (50, 100 and 150 W) for 8 minutes each. During this test we will measure your heart rate and blood pressure. We will also ask you to wear a nose clip (something that stops you breathing through your nose) and ask you to breathe through a mouthpiece. The mouthpiece/nose clip and mask will let us measure the gases you breathe and will allow us to calculate the rate of oxygen you use while exercising.

After a brief break, you will be asked to ride a distance equivalent to 10-km (6 miles). You will be asked to do this as quickly as possible. During this test you will be given lots of encouragement to ride as fast as you can. We will also ask you how hard you think you are working, and we will measure your heart rate.

Shortly after the time-trial, you will complete 30-seconds of very difficult cycle exercise. You will exercise as hard and as fast as you can. The exercise will be like a sprint. We will measure your power outputs during this exercise.

<u>Sessions 4 and 5 (Each lasting 60 minutes)</u>
These sessions will be very similar to Visits 2 and 3 to the lab and will be almost identical to each other. These visits will take place at the residential location.

Before these sessions you will be asked to buy edible cannabis from a state-registered dispensary. A single serving will contain 10 mg of cannabis. Consistent with Colorado law, the THC potency of each product must be clearly labeled. You will not be provided with money to purchase the edible cannabis; the researchers

will not touch the edible cannabis. You will be asked to demonstrate that the packaging containing the edible cannabis is unopened. You will be asked to provide the receipt from your purchase for inspection.

The edible cannabis product you will be asked to buy is:

Ripple Blood Orange Gummies (to be chewed)
Typical price: $18-20 for 20 gummies (i.e. 10 servings)
Please be aware: this product is sold in units of multiple servings; you will only be asked to ingest one serving (2 gummies).

The researchers will buy you one cannabis-free candy snack (i.e. a fruit gummy) that looks and tastes similar to the marijuana product.

At the start of Session 4, you will be asked to place 2 marijuana gummies (i.e. the equivalent of 10 mg THC) into an envelope provided by the research team. The research team will place 2 cannabis-free candy snacks into an identical envelope. You will be provided with two sticky labels, one labeled “A” and the other “B”. While blindfolded, you will be asked to secure the labels to the envelopes. A member of the research team will keep a record of the key (i.e. which letters correspond to marijuana and placebo). A coin toss will determine which envelope will be opened and the contents swallowed. You will be responsible for keeping the remaining envelope for the final session (Session 5). You will not be told during which session you swallowed marijuana and during which session you swallowed the fruit snack until the study is over. You will be invited to guess during which session you swallowed marijuana.

In order to prevent accidental overdose and/or unintentional marijuana ingestion, we respectfully request that you store your marijuana and study envelopes in a secure location away from children.

Prior to Sessions 4 and 5 you will be asked to abstain from use of all products derived from cannabis for 96 hours (4 days), abstain from alcohol and caffeine for 24 hours, and abstain from vigorous exercise for 18 hours. To standardize pre-session nutrition, 1 hour prior to session initiation you will be asked to drink 1x350 mL bottle of a liquid meal (Ensure) and eat 1 x sports bar. We will provide you with these.

Before you swallow the marijuana or fruit snack, a small plastic tube will be inserted into a vein in your hand or wrist (i.e. a venous catheter). Your hand and forearm will be wrapped in a heated blanket. The tube will remain in your vein for approximately 60-minutes. We will sample some blood to measure how much THC and how much lactate (an important exercise chemical) is in your circulation.

You will be asked to ride a stationary cycle ergometer at 3 low-to-moderate workloads (50, 100 and 150 W) for 8 minutes each. During this test we will measure your heart rate and your blood pressure. We will also ask you to wear a nose clip (something that stops you breathing through your nose) and ask you to breathe through a mouthpiece.

The mouthpiece/nose clip and mask will let us measure the gases you breathe and will allow us to calculate the rate of oxygen you use while exercising.

After a brief break, you will be asked to ride a distance equivalent to 10-km (6 miles). You will be asked to do this as quickly as possible. During this test you will be given lots of encouragement to ride as fast as you can. We will also ask you how hard you think you are working, and we will measure your heart rate.

Shortly after the time-trial, you will complete 30-seconds of very difficult cycle exercise. You will exercise as hard and as fast as you can. The exercise will be like a sprint. We will measure your power outputs during this exercise.

Session 5 will be identical to Session 4. These sessions will be separated by a minimum of 5-days. Session 5 will be completed at approximately the same time of day as Session 4.

Total blood collection for Session 4 will be 34 mL (approximately 7 teaspoons). Total blood collection for Session 5 will be 34 mL (approximately 7 teaspoons).

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?

There may be no direct benefit to you as a participant in this study. However, we hope to learn more about the influence of marijuana on exercise performance.

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

Body Composition (DEXA) Scan

The risks associated with the DEXA are very low. The maximum radiation dose you will receive in this study is less than 1/1000th of the federal and state occupational whole-body dose limit allowed to radiation workers (5,000 mrem). Put another way, the maximum dose from any scan we utilize with this DEXA ranges from 1.2 mrem (whole-body scan) to 12.2 mrem (for several of the regional scans, such as lumbar, femur, and forearm scans). The average annual background radiation you already receive is at least 620 mrem/year. The more radiation you receive over the course of your life, the more the risk increases of developing a fatal cancer or inducing changes in genes. The radiation in this scan is not expected to significantly increase these risks, but the exact increase in such risks is not known. There are no discomforts associated with this procedure. Women who are or could be pregnant should receive no unnecessary radiation and should not participate in this study.

Exercise

There is a very slight chance of an irregular heartbeat during exercise (less than 1% of all subjects). Other rare risks of a stress test are heart attack (less than 5 in 10,000) and even death (less than 2 in 10,000). Exercise may make you feel very tired and/or sick. Exercise may also make you sore (e.g. muscle aches). During cycle exercise the bike seat can be uncomfortable. During the sprint test you might damage a muscle and/or tendon. Should you get an injury during the study, you and/or your health insurance will be responsible for the cost of medical care.

Venous Catheter
You may feel some discomfort when the needle is inserted and taped to your hand or wrist. In about 1 in 10 cases, a small amount of bleeding will occur under the skin that will cause a bruise. The risk of forming a blood clot in the vein is about 1 in 100, and the risk of significant blood loss is 1 in 1,000. There is also a risk of minor and temporary physical and psychological distress associated with the collection of blood samples, including fainting. In very rare cases an infection can occur at the site of needle insertion.

Edible Cannabis
Cannabis might increase your heart rate and your blood pressure.
It might also increase the risk of a having a heart attack.
Certain chemicals in cannabis can weaken your immune system. This might make it more difficult for your body to fight infections.
Cannabis might increase your risk of an allergic reaction if you already have allergies to foods like tomatoes, bananas, and citrus fruit.
It is unclear if cannabis worsens chronic liver disease. While some weak evidence suggests that there might be a link, other evidence has not found a link.
Using cannabis after having a stroke might increase the risk of having another stroke.
Cannabis affects the central nervous system or the brain and nerves. It might slow the central nervous system too much when combined with anesthesia and other medications during and after surgery.
Use of cannabis is likely to lead to an altered state of consciousness. You may feel "high", very happy, euphoric, relaxed, sociable, and uninhibited.
You may experience distorted perceptions of time and space. You may feel more sensitive to things around you, and you may also experience a more vivid sense of taste, sight, smell, and hearing.
Using cannabis might make manic symptoms worse in people with bipolar disorder.
Cannabis use, especially frequent use, might increase the chance of getting depression. It can also worsen symptoms of depression and increase thoughts about suicide if you already have depression.
Using cannabis might make symptoms of schizophrenia worse.
If you currently have a job or intend to apply for a job that requires drug testing, you should not participate in this study.

Covid19
It is not possible to lower the risk of catching Covid19 to 0%. Our staff have all completed training to try to minimize the Covid19 risk of research participation. This training includes cleaning and dis-infecting research equipment and laboratory spaces, and wearing appropriate protective equipment (e.g. masks, gloves, and lab coats). Research staff will leave the room whenever you are requested to briefly remove your mask.

WILL I RECEIVE ANY COMPENSATION FOR TAKING PART IN THIS STUDY?

You may receive up to $100 for your participation in this study. Your remuneration will be as follows: You will not receive remuneration for completing any of the visits to the HPCRL. When you complete Session 4 you will receive $40. When you complete visit 5 you will receive $60.

WHO WILL SEE THE INFORMATION THAT I GIVE?

All information gathered in this study will be kept as confidential as possible. Your privacy is very important to us and the researchers will take every measure to protect it. Your information may be given out if required by law; however, the researchers will do their best to make sure that any information that is released will not identify you. No reference will be made in written or oral materials that could link you to this study. For this study, we will assign a code to your data so that the only place your name will appear in our records is on the consent and in our data spreadsheet which links you to your code. Only the research team will have access to the link between you, your code, and your data. All records will be stored in a restricted access folder at CSU for three years after completion of the study. After the storage time, the information gathered will be destroyed.

There are organizations that may inspect research records that may include yours. These organizations are required to make sure your information is kept private, unless required by law to provide information. Some of these organizations are:

- The CSU financial management team may request an audit of research expenditure, in which only your participating in the research may be shared, but not your research data.
- The Institutional Review Board, IRB, is a group of people who review the research with the goal of protecting the people who take part in the study.

A description of this clinical trial will be available on http://www.ClinicalTrials.gov, as required by U.S. Law. This website will not include information that can identify you. At most, the website will include a summary of the results. You can search this website at any time.

DO I HAVE TO TAKE PART IN THE STUDY?

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with CSU. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:

Your signature acknowledges that you have read the information stated and voluntarily wish to participate in this research. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing _9_ pages.

_____ _____

Signature of person agreeing to take part in the study Date

_____

Printed name of person agreeing to take part in the study

_____ _____

Name of person providing information to participant Date

_____

Signature of Research Staff providing information to participant