



The College of New Jersey

TCNJ Institutional Review Board

RESEARCH SUBJECT INFORMED CONSENT FORM

Dear Prospective Research Participant:

You are being asked to be a volunteer in a research study. Please read this consent form carefully, and ask as many questions as you like before you decide whether you want to participate in this research study. You may also ask questions at any time before, during, or after your participation in this research. You are encouraged to take your time in making your decision.

GENERAL INFORMATION

Project Title: THE EFFECTS OF RESISTANCE EXERCISE REST INTERVAL LENGTH MANIPULATION ON EXERCISE KINETICS AND KINEMATICS: A GENDER COMPARISON

Approved protocol number : _____ **Approval date :** _____ **Expiration date:** _____

Project sponsor(s): none

Principal Investigator: Dr. Nick Ratamess, Department of Health and Exercise Science, School of Nursing, Health & Exercise Science, The College of New Jersey, P.O. Box 7718, Ewing, NJ 08628; Email: ratamess@tcnj.edu; Telephone: 609-771-3149

Co-Investigator(s) on the project:

PROJECT INFORMATION

1. Purpose of the Research: The length of rest intervals (RI) used during resistance training is a variable of primary importance to the sport scientist and exercise practitioner. Rest interval length depends on training intensity, as well as training goals, fitness level, and energy systems targeted for response. The RI between sets/exercises affects the metabolic and hormonal responses to an acute bout of resistance exercise, as well as performance of subsequent sets and muscular strength improvements. We have shown in previous studies that: 1) short RI length leads to large reductions in performance but yields a high metabolic demand; 2) long RI length results in stable resistance exercise performance but yields a low metabolic demand; 3) RI length has a more profound effect in adults than in children and adolescents; and 4) RI length has a more profound effect in adult men than women, e.g. men experience larger reductions in performance than women using short RI length of 1-2 min. These studies have been cited several times and have been critical in developing training recommendations by major organizations including the American College of Sports Medicine and National Strength and Conditioning Association. However, little is known concerning how manipulating RI lengths on one exercise affects performance of subsequent exercises. In addition, potential gender and muscular strength differences in acute resistance exercise performance have not been examined. Thus, the purpose of the present investigation is twofold: to examine the effects of RI length on subsequent exercise performance and to investigate if gender or absolute muscular strength plays a role.

2. Exclusion/ Inclusion Criteria: To qualify for this study you must be between the ages of 18 and 25 years, a non-smoker, free of musculoskeletal disorders. If you take drugs known to influence muscular strength (e.g., anabolic steroids) you will not be eligible for this study.

3. Research Procedures: As a subject, you will perform maximum strength testing of the bench press, incline press, shoulder press, and bent-over row exercises. In addition, you will participate in three resistance exercise sessions where bench press RIs will be 1-, 2-, or 3-min and you will perform the remaining 3 exercises using 2-min RIs. All exercises will be performed using 70-75% of your predetermined maximal strength for each exercise (1RM). If you are participating in phase 2, you will perform 3 protocols consisting only of the bench press exercise using the same loading schemes and RIs as phase 1.

Visit #1: Preliminary Screening. In order to be accepted as a subject, your first visit to the laboratory (~30-40 minutes) will involve 1) completing a medical questionnaire and informed consent document; 2) familiarization to the procedures used in the study, and 3) having your body weight, percent body fat (via a 3-site skinfold test), and height measured. It is important that you DO NOT exercise for 24 hours prior to each testing session.

Visits #2: Muscular Strength Testing. Your one-repetition maximum (1RM) free-weight bench press, incline press, shoulder press, and bent-over row will be assessed using a standard protocol at a standard time of day. If you are participating in phase two, only

your 1RM bench press will be assessed. For each exercise, a standard warm-up will be used and each 1RM will be determined within 3-4 maximal trials. Rest periods in between trials will be 2-3 minutes. All trials will be performed using proper range of motion and technique, and supervised by a certified strength and conditioning specialist. Prior to initiation of all protocols, you will undergo a warm-up consisting of 3 min of stationary cycling, low-intensity stretching, and warm-up sets of each exercise with ~40-50% of 1 RM. The length of time per visit will be ~ 30-45 min.

Visits #3 to 5: Resistance Exercise Protocols. Phase one of the study will examine how manipulation of RI length of the primary exercise in a protocol affects performance of subsequent exercises performed after. You will come to the laboratory (3 days after strength testing) and perform three protocols over a 6-day period (following a similar warm-up to the strength testing session) in randomized order. You will perform four exercises in the following sequence for three sets each: bench press, incline press, shoulder press, and bent-over row. Relative load used for each set will be ~70-75% of your 1RM for up to 10 repetitions. The exercise where RI length will be manipulated is the bench press. You will perform the protocol using 1-, 2-, or 3-min rest interval (RI) (in randomized order) for the bench press. The remaining three exercises will be performed with a standard 2-min RI in between sets. For all exercises, weight will remain constant while repetitions are counted. A transducer will be used to measure bar velocity and power for each repetition completed. Our goal is to examine how RI manipulation of the primary exercise in the protocol (bench press) affects performance of the remaining three exercises especially since two of the remaining exercises stress similar muscle groups as the bench press. If you are participating in the 2nd phase of the study, you will report to the laboratory on three occasions (over a 6-day period) to perform three sets of bench press only with 1-, 2-, and 3-min RIs (in random order) with 70-75% of your 1RM for up to 10 repetitions per set. A transducer will be used for each repetition to measure bar velocity and power. All testing will be performed in the Human Performance Laboratory in Packer Hall and will be supervised a Certified Strength and Conditioning Specialist (CSCS).

4. Potential Risks and Discomforts: As a subject, you should understand that resistance exercise may cause muscle soreness for 1-3 days following testing or training. Soreness may be greatest after the first 1-2 sessions but then is greatly reduced afterwards. The targeted muscle groups include all major muscles of the arms, shoulders, and back. Resistance exercise involves a risk of injury due to strained muscles, ligaments, or tendons, as does any form of exercise. As a safety precaution, we will have you warm-up and a research assistant will be stationed near the equipment at all times to ensure proper form and technique during each exercise.

5. Potential Benefits of the Research: As a subject, you may benefit from this research by learning the results of your body composition and muscular strength data. You will be confidentially told the results of your tests. This type of testing and information is not routinely available.

6. Compensation for participation: As a subject, you will not be charged or financially compensated for participation in this study.

7. Alternative procedures or treatments: None

8. Provision for Confidentiality: All of the information we receive from you will be completely confidential. All of your data will be coded, with the keys to the codes only being available to the principle investigator conducting the study. Your name will not appear on any publication associated with the data obtained from this study.

9. Research-related Injury: The investigators will initiate any appropriate emergency action if necessary. The Human Performance Laboratory houses a telephone that can be used to immediately contact campus emergency response personnel if necessary.

The College of New Jersey will not provide compensation for any injury or illness resulting from participation in this study. You may go to student health services if you believe you have been injured as a result of this study

10. Contacts for additional information: If you have any questions about the study, you may contact the PI (Dr. Nick Ratamess) at the address given above. If you have concerns about the research or about your rights as a participant, please contact Dr. James Graham, Chair of The College of New Jersey Institutional Review Board (609-771-2810; jgraham@tcnj.edu).

11. Voluntary participation and the right to discontinue participation without penalty: Your participation in this study is voluntary. You do not have to be in this study if you do not want to be. You have the right to change your mind and leave the study at any time without giving any reason and without penalty. Any new information that may make you change your mind about being in this study will be given to you. You will be given a copy of this consent form to keep. You do not waive any of your legal rights by signing this consent form.

12. Conflict of Interest: None

13. Additional Information:

14. Consent: *If you sign below, it means that you have read (or have had read to you) the information given in this consent form,*

and you would like to be a volunteer in this study. You understand that you will receive a copy of this form. You voluntarily choose to participate, but understand that your consent does not take away any legal right in the case of negligence or other legal fault of anyone who is involved in this study. You understand that nothing in this consent form is intended to replace any applicable Federal, State, or Local laws.

Participant's Name (printed)

Participant's or Authorized Representative's Signature

Date

Principal Investigator's or Authorized Representative's Signature

Date

*This consent form was generated on
November 24, 2010, 10:27 am*