

# PARTICIPANT INFORMATION DOCUMENT

## Participants with Neck Pain

### Upper Trapezius Recruitment with a Repetitive Upper Limb Task

**Investigator Name: Marjorie Belot**

**Investigator Department: Kinesiology**

**Location: SFU Injury Prevention and Mobility Lab, School of Kinesiology**

**And Motor Behaviour and Learning Lab, School of Kinesiology**

Faculty of Applied Sciences

Burnaby, BC

See Appendix A for a list of other sites at which this research may be taking place as well as information explaining liability insurance coverage and relationship of the researcher to the clinic.

#### **A. Description of Study**

**Introduction:** Please read this document carefully before signing the consent form as this document describes the goals of the study and the procedures to be used including risks and benefits. If, after reading this document you find that you are unwilling or unable to understand and participate in the protocol as described, please let the researcher know and do not sign the consent form. Please note, should you express an interest in participating, a "Medical Release Form" will be provided to you, which must be signed by both you and a physician prior to your participation. This is essential in order for the research to comply with the policies of Simon Fraser University Department of Research Ethics. Instructions for return of the "Medical Release Form" are provided on the form.

**Recruitment:** Volunteers with persistent neck pain as well as healthy volunteers are being asked to participate. Up to 35 whiplash injured subjects and up to 20 healthy control subjects will be recruited from the community via flyers delivered to offices of family doctors, medical specialists, licensed therapists and private kinesiologists involved with

reconditioning of people post motor vehicle accident. You may have heard about this study from a health care provider or from notices posted at SFU campus (bulletin boards, web pages or emails) or various community bulletin boards. To thank you for your participation, you will be offered the opportunity to enter a draw to win \$200. Your odds of winning will be at worst, one in twenty-seven.

**Eligibility:** All participants will be adults between the ages of 19 and 65 years of age. You have been asked to participate as a person with neck pain. This means that you are a woman with persistent neck and or upper back pain which occurred within 48 hours of direct involvement in a motor vehicle accident (MVA) and which has persisted for a minimum of 6 months. You must be willing and able to discontinue medication likely to affect pain intensity or your ability to activate your muscles and control your movements (motor control) for 12 hours prior to testing. You do not qualify to participate if any of the following apply to you:

1. You had a neck fracture or dislocation in the accident or were diagnosed with upper limb nerve injury with conduction loss by a licensed health care professional (reduced sensation with objective testing, reduced reflex or painless muscle weakness caused by nerve injury).
2. You have had neck surgery (spinal surgery).
3. You were diagnosed with a concussion related to your motor-vehicle accident or have a known disorder of your brain or spinal cord which could impact your muscle activation.
4. You had widespread pain prior to your motor vehicle accident (e.g. fibromyalgia)
5. You have other causes of neck or upper thoracic pain following your accident such as osteoporotic fracture or bone infection
6. You were experiencing neck or upper thoracic pain in the month preceding trauma, bad enough to seek professional treatment.
7. You have an allergy to latex.

Please ask the researcher if you are unsure whether or not you qualify for this study.

***What you may need to do:***

This study will involve measurement of skin fold thickness at 4 body sites, and will involve measurement of heart rate, muscle activity (electromyography or EMG) of your upper back and calf muscles, filling in several questionnaires and participating in a clinical examination. All procedures will be performed by the principal investigator, who is a Registered Physical Therapist with 22 years of clinical experience. A research assistant may assist with the non-clinical procedures, such as operating the computer or assisting in set up of the EMG equipment.

To carry out the above-mentioned procedures, it is necessary that the researcher can see and touch your neck, shoulders, arms shoulder blades, upper arms and the side of your trunk (just above your pelvis) as well as your calves and ankles. **For this reason, it is necessary for you to wear clothing which makes these areas accessible and permits the researcher to measure skin fold thickness, secure a strap which has a heart rate sensor around your chest prepare your skin for electromyography (EMG), attach adhesive EMG electrodes (sensors) and insulated wires to your skin, as well as perform a clinical examination.**

You will be asked to do the following tasks:

1. ***Fill in a form*** that asks questions regarding your age, height, weight and occupation.
2. ***Have your skin fold thickness measured.*** Stand quietly while the researcher uses skin fold calipers, a painless tool, to measure the thickness of your skin and surface tissues (skin fold thickness measurement). Measurements will be taken on your right side at the front of your arm, the back of your arm, below your shoulder blade and above your hips/pelvis at your side. To carry out the measurement the researcher will first gently squeeze the surface tissues between their thumb and forefinger and then squeeze the tissues gently between the plastic arms of the skin fold calipers.
3. ***Allow the researcher to prepare and set up the EMG.*** Stand quietly while the researcher prepares your skin and then applies surface electrodes to measure muscle activity (EMG) at several sites. Skin preparation involves cleaning the skin with

alcohol as well as vigorous rubbing of the skin, and may require shaving with a disposable razor if the area is hairy, to give the best signals for recording EMG. The researcher will apply electrodes to your upper back, calves and wrist or ankle to measure EMG. The researcher will also apply tape to your skin to ensure the wires do not move too much during the procedures. The wires will be connected to a small device that will be secured at your waist. The recording of muscle activity is painless.

4. ***Allow the researcher to apply a strap around your chest which has a heart rate sensor attached to it.***

5. ***Carry out positions and movements with the EMG electrodes and leads attached.***

Once the EMG equipment is prepared for recording, the researcher may ask you to do the following:

- a. Rest quietly on your back on a massage table, with pillows under your knees and head/neck for 6 minutes.
- b. While still lying on your back, raise both arms towards the ceiling 45 degrees and maintain the position for 10 seconds. You will be asked to repeat this 3 more times with a one minute rest between each repetition.
- c. Stand on the floor, rise up on your toes as high as you can go, when asked by the researcher and maintain this position for 10 s. You will be asked to repeat this 3 more times with a one minute rest between each repetition.
- d. Sit with your back and feet supported and hands resting in your lap for 3 minutes.
- e. While sitting, with your back and feet supported, raise both arms out to the side to 90 degrees, keeping your elbows straight and your palms down. The researcher will ask you to maintain the position for 10 s each time. There will be a one minute rest after each repetition and a maximum of 4 repetitions.
- f. While sitting, with your back and feet supported, raise both arms in front of you to 45 degrees, keeping your elbows straight and your palms down. The researcher will ask you to maintain the position for 10 s each time. There will be a one minute rest after each repetition and a maximum of 4 repetitions.

- g. Stand with good posture for 5 minutes.
- h. Sit at a table in an office chair that will be adjusted for your height and perform a repetitive task with your right arm for several minutes, as directed by the researcher. The researcher will describe the task and demonstrate and give you a chance to practice a few cycles of the task. The task involves using your right arm to mark target circles on the table in front of you, using the marker provided.
- i. Stand with good posture for 5 minutes.

The EMG electrodes and leads as well as the heart rate monitor will be removed prior to the next portion of the study.

5. ***Fill in questionnaires.*** You will be asked to fill in the following questionnaires:

- a. Regarding your accident (date, direction of collision), work status (returned to occupation, working modified hours or duties, off work due to MVA, other), and symptoms and medications related to the accident as well as other current major medical problems.
- b. Neck Disability Index (includes pain level 0-10). You will be asked questions regarding level of difficulty with various daily activities.
- c. General Health Questionnaire-28 You will be asked questions regarding recent changes in mood or emotions.
- d. Impact of Events Scale You will be asked questions regarding stress related to the accident.
- e. Tampa Scale of Kinesiophobia You will be asked questions regarding your comfort with movement

6. **Participate in a physical examination by a Registered Physical Therapist.** The researcher, who is a registered Physical Therapist will ask that you participate in the following clinical tests:

### **a. sensory testing**

Most of the sensation tests will include your upper back, neck and head. All will be performed on right and left sides of your body.

*i) light touch:* The researcher will stroke your skin with cotton balls, or lightly with index fingers if over your clothing.

*ii) warm and cool sensation:* The researcher will touch your skin lightly over the back of your neck with a blunt metal object and you will be asked to report whether it is cool or warm, and report if it is painful or not painful.

*iii) small sharp object sensation:* A plastic “pinwheel” (Wartenberg) will be lightly applied to various points on your upper body. You will be asked to tell the researcher when you feel the sharp object.

*iv) brachial plexus tension test:*

You will lay on your back with your neck supported by a pillow or towel. The researcher will apply gentle pressure to one shoulder, bring your arm slowly out to the side and turn it outwards, bring your wrist backwards in to extension and straighten your fingers followed by straightening of your elbow.

*v) pressure sensitivity:* Light Pressure will be applied to your skin at several places on your neck, arms and calf. A small medical device designed for testing pressure will be used. The researcher will gradually increase the pressure until you advise them the sensation has just changed from pressure to slight pain.

Three measurements will be taken at each site.

### **c. sensorimotor tests**

*i) reflexes:* You will sit with your arms relaxed on a pillow. A standard reflex testing tool will be used to apply a stretch to the tendons of your wrists and elbows.

*ii) strength testing* The researcher will apply pressure with her hand to resist a variety of muscles and test your strength. You will be asked to activate the muscles as strongly as you can for each of the following movements:

- outwards movement of your pinkie/baby finger

- bending the tip of your thumb
- straightening your elbow
- extending (lifting) your wrist/hand towards the ceiling
- bending your elbow
- swinging your arm outwards, keeping your elbow by your side
- shrugging your shoulder
- tucking your chin

iii) ***active neck mobility***

A mobility testing device (CROM device) will be applied to your head and shoulders. This involves placing a light measurement tool attached to an adjustable headband on your head, and adjusting it to the size of your head, as well as placement of a light magnetized yoke over your shoulders. The device will measure the amount of movement between the headband and the shoulder yoke as you move your head and neck in various directions.

You will be instructed to move as far as possible in each direction, keeping your shoulders still, followed by a return to the start position (facing directly ahead). Each movement will be demonstrated by the researcher and repeated 3 times by you. The movements will be looking up and down, tilting your head right and left and turning your head to the right and left.

ii) ***Test of muscles on the front of the neck:*** You will lie on your back on a portable massage table, and a small, inflatable latex airbag will be placed behind your neck and then inflated slightly. You will be asked to place your tongue on the roof of their mouth, keep your lips together and teeth slightly apart.

You will be instructed to slowly and gently nod your head similar to indicating “yes” and hold the position for 5 s once the researcher indicates verbally that the target

pressure has been reached. The task will be repeated for the target pressures of 22- 28 mm Hg, with increments of 2 mm Hg. A 10 s rest will be provided between increments. You will be able to view the dial in order to obtain visual feedback on your performance and will be allowed up to 1 minute of practice and familiarization with the task.

### **B. Risks and Benefits**

**Study Goals:** This study is designed to investigate differences in muscle recruitment patterns between groups of whiplash injured people and healthy people.

**Risks:** There are no risks to society or any third parties in this research study. Some participants may have a brief feeling of discomfort during the skin-fold thickness measurement procedure. Temporary redness and minor skin irritation related to the skin preparation and taping for the EMG recording sometimes occurs. The EMG equipment has Underwriter's Laboratory safety certification (meets international safety standards) but it does not have Health Canada Licensing.

By the nature of the test itself, determining pressure sensitivity will result in temporary pain. This pain is usually of very low intensity and normally abates within a few seconds. The therapist will perform a number of tests or procedures in a gentle manner and explain each test in advance. Some people in the past have indicated that they experience mild discomfort during some of the other procedures. This is more frequently reported if patients are recovering from an injury. In all cases the pain should be transient and usually abates as soon as the procedure is completed. For some people symptoms could last up to a day.

You may find that filling in the questionnaires regarding your emotions and stress related to the accident makes you feel discomfort.

Any pain, stress, or discomfort associated with the procedures in this study should be mild and temporary but if you have persisting discomfort, please contact the researcher

who is a Registered Physiotherapist and follow up with your family doctor, if advised to do so.

**Benefits:** Your participation in this research will help the researchers to learn information that has the potential to contribute to reduction and prevention of chronic pain and disability in people with whiplash associated neck injuries by improving assessment, classification and treatment.

**Confidentiality:** Your name will only appear on one master list of participants which has a list of assigned ID codes, and on the consent form. This information will be maintained in Dr. Goodman's locked office, will not be accessible to anyone but him and will be shredded upon completion of the follow-up study. The assigned ID code will be used for all other study documents pertaining to you, which will maintain your confidentiality and anonymity. All other data will be retained for a minimum of 2 years and a maximum of 5 years following completion of the study. All information regarding participants will be pooled in the study so information will not be traceable to you in the results.

### C.

**Legal Disclaimer:** Your confidentiality will be maintained to the greatest extent possible, limited by the laws of British Columbia and Canada.

Should you have any concerns regarding this research, contact:

Dr. Hal Weinberg, Director  
Office of Research Ethics  
hal\_weinberg@sfu.ca

## **Appendix A “Upper Trapezius Activity with a Repetitive Upper Limb Task” Offsite Locations for Data Collection**

The following clinics have offered their space for data collection by Marj Belot for the above named study. The clinics are independent of the researcher. The researcher and participants are covered by SFU Liability Insurance Policy. In the unforeseen and unlikely event of accident or injury to you, the participant, please follow-up with the researcher and not the clinic as the clinic is not legally responsible for the actions of the researcher.

### **Burnaby**

#### **AAA Physiotherapists Corporation**

108-4603 Kingsway

Burnaby, B.C.

V6Y 2P2

<http://www.aaaphysio.ca>

Owner: Maggie Leung

### **Coquitlam**

#### **Coquitlam Physiotherapy**

222 - 1024 Ridgeway Avenue

Coquitlam, BC

V3J 1S5

<http://www.guildfordphysio.com>

Owner: Joy Kirkwood

#### **Eagle Ridge Aquatic Centre Physiotherapy Clinic**

1210 Pinetree Way

Coquitlam, BC

V3B 7T8

Owner: Lisa Rahn & Michele Aldrich

### **Delta**

#### **Tsawwassen Sports and Orthopaedic Physiotherapy Clinic**

101-5405 12th Avenue

Delta, BC

V4M 2B2

<http://www.myphysio.ca>

Owner: Valerie Moilliet

## **New Westminster**

### **Keary Physiotherapy Clinic**

Kemecsey & Ly Corporation  
413 Columbia St E  
New Westminster, BC  
V3L3X3  
<http://www.kearyphysio.com>  
Owner: Marta Kemecsey  
& May Ly

## **North Vancouver**

### **North Shore Sports Medicine Clinic - Physiotherapy at the North Shore Winter Club**

North Shore Winter Club,  
1325 East Keith Road,  
North Vancouver  
V7J 1J3  
<http://www.northshoresportsphysio.com>  
Owner: Paige Larson

### **Synergy Physiotherapy**

300 - 1124 Lonsdale  
North Vancouver, BC  
V7M 2H1  
<http://synergyphysio.ca>  
Owner: Linda-Joy Lee

## **Surrey**

### **Guildford Physiotherapy and Hand Therapy Clinic**

200-15387-104th Ave.  
Surrey, BC  
V3R 1N5  
<http://www.guildfordphysio.com>  
Owner: Joy Kirkwood

## **Vancouver**

### **Burrard Physiotherapy**

#1020 - 1200 Burrard St  
Vancouver BC  
V6Z 2C7  
<http://www.burrardphysiotherapy.com>  
Owner: Kerry Maxwell

**Crossroads Physiotherapy & Massage Therapy**

350 - 507 West Broadway Avenue

Vancouver, BC

V5Z 1E6

Owner: Janet Leung

**Dayan Physiotherapy**

1530 W 7th Ave.

Vancouver, BC

V6J 1S3

Owner: Marcy Dayan

**Treloar Physiotherapy Clinic**

505-686 W. Broadway

Vancouver, BC

V5Z 1G1

Owners: Carol Kennedy, Bill Treloar, Deb Treloar

**West 4<sup>th</sup> Physiotherapy Clinic**

216-2211 W 4th Avenue

Vancouver BC

V6K 4S2

<http://www.west4thphysio.com>

Owner: Matt Powell