

# WINTER SWIMMING IMPROVES GENERAL WELL-BEING

Pirkko Huttunen<sup>1</sup>,  
Leena Kokko<sup>2</sup>,  
Virpi Ylijokuri<sup>3</sup>

## ABSTRACT

**Objectives.** This study deals with the effects of regular winter swimming on the mood of the swimmers.

**Methods.** Profile of Mood State (POMS) and OIRE questionnaires were completed before (October) and after (January) the four-month winter swimming period.

**Results.** In the beginning, there were no significant differences in the mood states and subjective feelings between the swimmers and the controls. The swimmers had more diseases (about 50%) diagnosed by a physician. Tension, fatigue, memory and mood negative state points in the swimmers significantly decreased with the duration of the swimming period. After four months, the swimmers felt themselves to be more energetic, active and brisk than the controls. Vigour-activity scores were significantly greater ( $p < 0.05$ ). All swimmers who suffered from rheumatism, fibromyalgia, or asthma, reported that winter swimming had relieved pains.

**Conclusion.** Improvement of general well-being is thus a benefit induced by regular winter swimming. (*Int J Circumpolar Health* 2004;63(2):140-144)

**Key words:** winter swimming, mood state, diseases

<sup>1</sup> Department of Forensic  
Medicine, University of Oulu

<sup>2</sup> Winter-swimming  
centre of Kajaani

<sup>3</sup> Medivire Occupational  
Services Ltd., Oulu, Finland

## INTRODUCTION

Winter swimming, which is increasingly popular in Finland, involves taking a dip in ice-cold, natural waters regularly throughout the winter season. Most people initiate winter swimming through curiosity, and keep up the swimming hobby for pleasure. For on-the-go people, it is the ideal pastime, since it does not consume much time. Many swimmers also believe that exposure to ice-cold water is beneficial to their health. However, most of the evidence supporting this contention has been anecdotal in nature, or came from studies based on small samples. Two previous studies reported that winter swimming abolishes general tiredness, improves mood, decreases fatigue and boosts self-esteem (1,4). It also relieves pain in many diseases, such as fibromyalgia and rheumatoid arthritis. Whole body cryotherapy, in which patients are exposed to very cold air (-110°C) is used in the treatment of rheumatic diseases (7,9,10). After the treatment, patients are painless for two, three hours. The purpose of the present paper was to study the effect of regular winter swimming on the general well-being of the swimmers. It aimed to confirm subjective reports of positive effects on the somatic and mental health of winter swimmers.

## MATERIAL AND METHODS

Forty-nine voluntary Finnish winter swimmers and 33 non-swimmers from the Finnish city of Kajaani participated in the study. Due to difficulties in finding a control group the swimmers asked a non-swimmer of the same age to join the control group. All subjects were fully informed and gave their written consent. The study was approved by the ethical committee of the Medical Faculty of the University of Oulu. Thirty-six swimmers (29 women, 7 men) and 23 controls (17 women, 6 men), aged 30 – 68 years, completed questionnaires on the Profile of Mood States (POMS) (6) and on the Subjective Symptoms (OIRE form) (3) at the beginning of the winter-swimming period in October and again in January, after four months of winter-swimming. The mean age was 53 years for the swimmers and 51 years for the controls. Thirteen swimmers and 10 controls were lost to follow-up.

POMS consists of an objective rating scale designed to measure mood state, including tension, fatigue, confusion, vigour, depression and hostility. The OIRE questionnaire assesses subjective factors of mood and memory function, general alertness, sleep quality and somatic symptoms.

The subjects also responded to closed questions, including diseases diagnosed by a physician with a 2-point scale (1 = yes, 2 = no), and life events affecting mood with a 4-point scale (1 = positive, 2 = negative, 3 = both, 4 = no events).

It was also asked whether the subjects have other outdoor activities.

Changes in scores of the questionnaires were analysed by non-parametric Wilcoxon and Mann-Whitney U tests.

## RESULTS

The swimmers practised winter swimming an average of 4 times a week. The controls did not practise winter swimming, but led a normal city life. 53 % of the swimmers and 52 % of the controls also participated in other outdoor activities, such as, walking, jogging, skiing and biking.

Only 20 % in the control group had some disease diagnosed by a physician, whereas about 50 % of the swimmers suffered from some disease, such as, asthma, rheumatoid arthritis, fibromyalgia, arthrosis, hypothyroidism, Parkinson disease, or high blood pressure.

In October, before the winter swimming period, there were no significant differences in the scores of the questionnaires between the groups. The swimmers had a few more somatic symptoms ( $p = 0.089$ ). Tension and fatigue scores in the swimmers significantly decreased with the duration of the swimming period ( $p = 0.034$  and  $p = 0.001$ ). The negative memory and mood state points were also lower in January, after four months, than at the beginning ( $p = 0.023$  and  $p = 0.024$ ). Changes in the controls were not significant. Results from the POMS indicated that winter swimmers exhibited more vigor and less fatigue than the controls ( $p = 0.026$  and  $p = 0.057$ ) (Table I).

There were no significant differences in life events affecting mood between the groups. Three swimmers and four controls had positive life events and, in both groups, two subjects had negative events.

All swimmers who suffered from rheumatism (2 subjects), or asthma (3 patients), found that winter swimming relieved pains. Swimming in ice-cold water also helped to withstand the symptoms associated with fibromyalgia (2 patients) and arthrosis (1 subject).

**Table I.** POMS and OIRE scores in swimmers and controls at the beginning of October and at the end of January.

Scores	Before winter swimming		After winter swimming	
	Swimmers	Controls	Swimmers	Controls
Tension	3.8 ± 2.7	3.9 ± 5.2	3.0 ± 2.5 <sup>x</sup>	2.7 ± 2.7
Fatigue	4.6 ± 3.2	4.3 ± 2.6	3.0 ± 2.5 <sup>xx, a</sup>	4.4 ± 2.7
Vigour	16.3 ± 4.4	14.0 ± 5.2	17.1 ± 3.6 <sup>a</sup>	14.6 ± 4.3
Depression	4.8 ± 5.7	5.2 ± 6.6	4.3 ± 4.1	3.9 ± 5.9
Memory	3.2 ± 2.3	2.7 ± 2.4	2.5 ± 1.8 <sup>x</sup>	2.2 ± 1.6
Mood	3.0 ± 2.6	2.8 ± 2.8	2.1 ± 1.8 <sup>x</sup>	2.1 ± 1.8

Results are mean ± SD

x = p < 0.05 and xx = p < 0.01 compared to pre-winter scores

a = p < 0.05 compared to the corresponding scores in the controls

## DISCUSSION

The study showed that adaptation to cold water was associated with a significant decrease in tension and fatigue and an improvement in mood and memory. The swimmers felt themselves more vigorous, energetic, active and brisk than the controls after the winter swimming period of four months. An image of the benefits of winter swimming might, at least partly, affect emotions and emotions have a huge trans-ferral impact on normal life.

About 50% of the middle-aged winter swimmers practised swimming for health reasons and over 40% of them reported getting relief from pains. Aches and other troubles were felt to diminish, which may be partly due to mood improvement, since positive outlooks raise the pain threshold (5, 11). A home-based hydrotherapeutic thermal treatment (warm- and cold-water applications) has been found to improve the quality of life, heart failure-related symptoms and heart rate response to exercise in patients with mild chronic heart failure (8). In Finland, swimming in ice-cold water is often followed by taking a sauna.

It seems that winter swimming relieves pain and inflammation in rheumatic diseases in much the same way as whole body cryotherapy (-110°C for 1 to 3 min in minimal clothing) does. Exposure to ice-cold

water induces a stress reaction, activating the sympathetic nervous system and increasing the secretion of catecholamines, especially noradrenaline (2). This is probably one factor behind the refreshing and pain-relieving effect of winter swimming. The change in plasma adrenaline seems to be dependent on its level prior to an exposure. Low levels may increase, whereas high levels may drop during swimming (2). Changes in the functions of both the autonomic and central nervous systems induced by the cold may have a role in the regulation of mood and pain threshold. Adaptation to cold by repeated exposures to cold water may increase the ability to withstand other kinds of stress. Improvement of general well-being via adaptation to oxidative stress is a benefit induced by regular winter swimming.

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*Pirkko Huttunen*  
 Department of Forensic Medicine  
 FIN-90014 University of Oulu  
 Finland  
 Email: [pirkko.huttunen@oulu.fi](mailto:pirkko.huttunen@oulu.fi)