

NEUROTIC PSYCHOPATHOLOGY AND ALEXITHYMIA AMONG WINTER SWIMMERS AND CONTROLS – A PROSPECTIVE STUDY

ABSTRACT

Random samples of 25 voluntary Finnish winter swimmers (7 males, 18 females) and 11 controls (3 males, 8 females) were followed prospectively during the winter season from October 1999 to May 2000 to determine whether winter swimming is beneficial for mental well-being, as many of its practitioners claim. The Crown-Crisp Experimental Index (CCEI) was used for measuring free-floating anxiety, phobic anxiety, obsessiveness, depression, somatic anxiety and hysteria, and the 20-item version of the Toronto Alexithymia Scale (TAS-20) for measuring alexithymia. Self-reported somatic and mental health and the reasons for and the frequency of winter-swimming were asked, too. As revealed by open questions, the winter swimmers reported positive effects of winter swimming. Several of the swimmers also told that they had started winter swimming to improve their physical and mental health. Their experience was that the swimming had relieved physical symptoms and made their mood more positive. However, we found no major differences between winter swimmers and controls in any CCEI or TAS variables. The structured questionnaires do not necessarily, however, reach subjective feelings and experiences. (*Int J Circumpolar Health 2002; 61: 123-130*)

Key words: winter swimming, cold stimulation, alexithymia, CCEI, TAS-20

Winter swimming is an increasingly popular form of recreation and self-care in Finland. It involves taking a dip in a hole in ice-topped natural waters regularly throughout the winter. Some people alternate this with a hot sauna; some do not. During cold exposure the blood pressure and pulse rise, and stress hormones, such as adrenalin, noradrenalin and cortisol are secreted (1,2). These physiological responses are affected by age, gender and cold adaptation when winter-swimming is regularly practised (3,4). Hermanussen et al. (1995) (5) have proposed that long-term winter-swimming increases basal prolactin levels and lowers insulin serum levels. The beneficial influence of winter-swimming on body hardening (6,7) to the glutathione systems of erythro-

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cytes (8), and to pain threshold and cold tolerance (9) have also been reported. In our pilot study, people who practice winter swimming perceived themselves to enjoy better somatic health than the average, and they felt winter-swimming improved their mood and decrease tiredness (10).

In the 70's two reports dealing with the personality traits of winter swimmers and psychic factors in sauna bath habits have been published (11,12). But, as far as we know, no controlled studies of mental health of winter swimmers (WS hereafter) have been published. In our pilot study (10) on a random sample of Finnish WS we found the participants vividly describing positive subjective effects on somatic and mental health, as well as pleasant physical sensations after swimming. It raised the question whether winter swimming really has a positive effect to mental health. The way the WS described their feelings was in contrast to alexithymia which refers to inability to differentiate emotional from physical states and to identify and describe one's feelings, as well as a preference for externally oriented, utilitarian thinking rather than fantasy or introspection (13). We hypothesized that WS probably are less alexithymic than other people.

The aims of this study was to 1) compare WS with a control group regarding psychoneurotic symptoms and alexithymic traits and 2) study whether the frequency and duration of winter swimming have some effects on these symptoms and traits among WS. By a prospective setting we tried to study whether psychic and somatic symptoms change during the season of winter swimming.

MATERIAL AND METHODS

The authors contacted the WS in Oulu by distributing an information letter to the cottage they have for swimming, and asked volunteers to participate. We also asked the participants to invite, for a control in our study, a same aged friend who does not participate in winter swimming. An inclusion criteria for all participants was that they are physically healthy persons approximately 50 years of age and older. After receiving the names and addresses of the interested we sent the questionnaires with an envelope to return. Out of those interested we accepted those who were physically healthy and between 47 and 65 years of age. All subjects were fully informed, and they gave written informed consent. The study plan was accepted by the ethical commit-

tee of the University of Oulu.

Our prospective study consisted of three consequent data collections: the first before the beginning of the season of winter swimming in October 1999, the second in January 2000 and the third in May 2000. The questionnaires were sent and participants were asked to come to the laboratory. Each time the participants gave a blood sample for later analyses of hormones. In addition, blood pressure was measured.

The Crown Crisp Experimental Inventory (CCEI), also called the Middlesex Hospital Questionnaire (14-16), was used for measuring psychopathology. It is a self-rating scale consisting of six subscales designed to measure different kinds of neurotic type psychopathology: free-floating anxiety, phobic anxiety, obsessiveness, depression, somatic anxiety, and hysteria. Each subscale consists of eight questions, followed by two or three possible answers. Depending on the question, the answer can be no (coded 0) or yes (coded 2); never, sometimes, or often (coded 0, 1, or 2); or no, moderately, or a lot (coded 0, 1, or 2). Each subscale is accordingly scored from 0 to 16.

The twenty item version of the Toronto Alexithymia Scale (TAS-20) was used to measure alexithymia. All items are rated on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree) for a maximum score of 100. The TAS-20 has a three-factor structure; Factor 1 assesses difficulty in identifying feelings, Factor 2 concerns itself with difficulty in describing feelings and Factor 3 reflects externally-oriented thinking. Based on the TAS-20, the total score and the scores of TAS factors 1-3 were calculated. According to the developers' recommendations, subjects with a score TAS-20 > 60 were defined as alexithymic (17).

In addition to the above mentioned questionnaires, questions concerning the sociodemographic characteristics (gender, age, marital status, education, occupational status), self-reported somatic and mental health, as well as the reasons for and the frequency of winter-swimming were asked. The WS were dichotomised 1) according to the frequency of winter-swimming during the observation period (less than 100 times vs 100 times or more), and 2) according to the duration of the winter-swimming (less than one year vs one year or more).

Analysis of variance was used as a statistical method when the means of CCEI and TAS variables were compared between WS and control groups.

RESULTS

Our sample consisted of 25 WS (7 males, 18 females) and 11 controls (non-winter swimmers) of the same age group (3 males, 8 females). The mean ages of WS and controls were 55.1 and 53.8 years, respectively. Among WS the proportions of divorced and unemployed persons were higher as compared with controls. The distribution of basic socio-demographic factors are shown in Table 1.

The mental health was quite good in both groups in terms of the different CCEI scales in all three measurements. Similarly, concerning alexithymia only in the second measurement one WS scored 61 TAS-points. All other TAS-scores in the three measurements were below it, in other words non-alexithymic. In the comparison of the whole WS group and controls no differences were found in the three measurements in terms of CCEI or TAS-20 variables. When the changes between different measurement points were analysed only one significant difference was found between the groups. The mean of the TAS-score difference between measurements 1 and 3 was higher among WSs than controls. A parallel finding was found in the case of TAS-factor 3.

Table 1. Description of the groups.

Age (years)	Winter-Swimmers		Controls	
	Range	48-65	47-63	
Mean		55.1	53.8	
	N	(%)	N	(%)
Gender				
Male	7	28	3	27
Female	18	72	8	72
Marital status				
Unmarried	2	8	1	9
Cohabiting	3	12	1	9
Married	12	48	7	63
Divorced	7	28	2	18
Widowed	1	4	0	
Education				
Trained at work	3	12	2	20
Skilled worker	5	20	1	10
College	13	52	4	40
University degree	4	16	3	30
Occupational status				
Working	18	72	9	82
Unemployed	2	8		
Disability pension	2	8		
Other pension	1	4	1	9
Other	2	8	1	9

Given the multiple comparisons, these differences may be due to chance alone (Type I error).

When different WS subgroups were compared to the controls, some minor differences emerged in few measurements, but no common differences in the mental health of the groups were found. All measurements concerning the CCEI scales and TAS-total scores in the three measurements are shown in table II and similarly the differences in the scores between the measurements.

The reasons for winter swimming was asked by an open question: *"Tell your personal view why you practice winter-swimming"*. The typical answers concerned general well-being and the easiness to practice this hobby, as *"To abolish tiredness"*, *"Because of a general well-being after swimming"*, *"One gets energy from cold water"*, *"One can go swimming any time"*. Also statements concerning somatic health and mental well-being were presented: *"To improve blood circulation, to normalize blood pressure, to diminish joint pain"*, *"It helps for the hot flushes and other menopause symptoms"*, *"Menopausal symptoms have diminished and I use no more hormones"*, *"To keep the pain away"*, *"The pain in the finger joints decreased"*, *"My knees ached but the swimming helped"*, *"My shoulder got painful and I decided to manage without medicines"*, *"To refresh the mood"*, *"To increase the coping with stress"*, *"To get positive effects on the mood"*, *"To improve the sleep"*. Also a social importance of winter swimming was emphasized: *"One meets other brisk and joyful people."*

DISCUSSION

In this study the mental health of WS was not better than in other people. In addition, neither the frequency of winter swimming nor the length of the hobby changed the picture mentioned above. WS were not alexithymic as was hypothesized.

As far as we know, this is the first controlled study concerning the mental health of WS. Therefore we cannot compare results with earlier studies. Both groups in the current study were clearly less alexithymic than the general Finnish population (18). Similarly, the scores in the CCEI scales did not differ from the results obtained in the earlier study on young Finnish female students (16).

Although we did not have the official anamnestic data of the WS health preceding the beginning of the winter swim-

Table II. Crown Crisp Experiential Index and Toronto Alexithymia Scale20 scores in Winter Swimmers (WS) and in controls, means (M) and standard deviations (SD)

Variable	All winter swimmers M (SD)	Swimming timeSwimming frequency			Controls	
		- 1 year M (SD)	Over 1 year M (SD)	0-99 times M (SD)	100- times M (SD)	M (SD)
I measurement						
Free floating anxiety	3.7 (2.2)	3.6 (2.4)	3.5 (2.1)	4.4 (2.1)	3.4 (2.6)	4.2 (3.4)
Phobic anxiety	2.4 (1.9)	2.4 (2.3)	2.3 (1.5)	2.1 (1.9)	2.8 (1.7)	3.4 (2.4)
Obsessionality	6.4 (2.5)	6.6 (1.7)	6.2 (3.1)	7.0 (2.3)	6.0 (2.8)	7.3 (3.7)
Somatic anxiety	2.4 (2.0)	1.8 (1.7)	2.6 (1.9)	4.0 (1.9) ^{1, 2}	1.4 (1.4) ²	2.8 (1.5) ¹
Depression	3.3 (2.0)	3.5 (2.3)	3.2 (1.8)	3.4 (1.6)	3.3 (2.1)	2.9 (1.8)
Hysteria	5.8 (2.9)	5.1 (3.1)	6.7 (2.7)	6.1 (2.7)	5.8 (2.7)	6.1 (2.5)
Alexithymia	39.8 (9.1)	38.7 (10.8)	41.1 (8.1)	43.0 (6.6)	36.6 (10.1)	40.6 (10.1)
II measurement						
Free floating anxiety	3.3 (2.6)	2.9 (2.3)	3.3 (2.4)	4.7 (3.1)	2.8 (2.3)	3.7 (2.1)
Phobic anxiety	2.3 (1.8)	2.1 (2.0)	2.4 (2.0)	2.2 (2.2)	2.5 (1.5)	2.1 (2.0)
Obsessionality	6.0 (2.8)	6.3 (2.5)	5.6 (3.3)	6.3 (2.9)	5.5 (2.9)	7.0 (2.8)
Somatic anxiety	2.1 (1.9)	2.0 (2.7)	2.3 (1.5)	2.9 (1.1)	1.7 (2.0)	2.5 (1.4)
Depression	2.9 (1.9)	3.1 (1.7)	3.2 (2.2)	3.2 (2.2)	2.8 (1.7)	2.5 (1.6)
Hysteria	5.2 (3.5)	5.7 (4.0)	4.7 (2.9)	5.9 (3.4)	5.2 (3.4)	5.5 (2.3)
Alexithymia	38.3 (10.0)	35.3 (9.8)	42.0 (10.6)	43.4 (10.1)	34.8 (9.7)	41.3 (10.1)
III measurement						
Free floating anxiety	3.3 (2.1)	3.0 (2.6)	3.3 (1.9)	4.0 (2.0)	2.8 (2.39)	4.4 (2.5)
Phobic anxiety	2.0 (1.8)	1.8 (1.7)	2.0 (2.1)	2.0 (2.2)	2.0 (1.7)	2.0 (1.7)
Obsessionality	5.9 (3.7)	6.5 (2.9)	5.3 (4.5)	6.9 (4.2)	5.1 (3.5)	7.0 (2.4)
Somatic anxiety	2.0 (1.4)	1.9 (1.2)	2.2 (1.6)	2.7 (1.7)	1.7 (1.1)	2.5 (1.4)
Depression	3.1 (1.9)	3.6 (1.7)	3.2 (2.1)	2.7 (1.9)	3.5 (2.0)	2.7 (1.6)
Hysteria	6.5 (3.3)	7.1 (2.4)	5.5 (3.4)	7.3 (3.4)	6.0 (3.4)	5.7 (2.0)
Alexithymia	36.6 (9.0)	34.5 (9.0)	38.6 (9.7)	39.4 (8.5) ³	33.7 (8.7)	42.1 (7.8) ³
Difference; I – II Measurement						
Free floating anxiety	0.3 (2.0)	0.7 (2.0)	0.2 (1.9)	-0.6 (2.0)	0.6 (2.0)	0.4 (2.6)
Phobic anxiety	0.2 (1.6)	0.3 (1.6)	0.1 (1.7)	-0.1 (1.9)	0.3 (1.2)	1.3 (1.3)
Obsessionality	0.5 (1.7)	0.4 (1.4)	0.6 (2.1)	0.5 (1.9)	0.5 (1.9)	0.4 (2.2)
Somatic anxiety	0.2 (1.5)	-0.2 (1.2)	0.3 (1.6)	1.0 (1.5)	-0.3 (1.4)	0.4 (1.3)
Depression	0.1 (1.5)	0.5 (1.7)	-0.3 (1.3)	-0.1 (1.1)	0.5 (1.7)	0.7 (1.4)
Hysteria	0.5 (2.1)	-0.6 (1.9) ⁴	1.7 (1.9) ⁴	0.9 (2.5)	0.6 (2.0)	0.9 (2.8)
Alexithymia	1.0 (5.7)	3.5 (4.3) ⁵	-1.3 (6.3)	-1.5 (6.8)	1.8 (5.4)	-1.0 (4.0) ⁵
Difference; II – III Measurement						
Free floating anxiety	0.3 (1.8)	0.4 (1.5)	0 (1.9)	0.7 (2.4)	0.1 (1.3)	-0.4 (2.4)
Phobic anxiety	0.5 (1.3)	0.9 (1.7)	0.4 (1.1)	0.2 (0.8)	0.5 (1.2)	0 (0.8)
Obsessionality	-0.1 (1.9)	-0.4 (1.9)	0.3 (1.9)	-0.6 (2.4)	0.4 (1.2)	0.2 (2.1)
Somatic anxiety	0.1 (1.1)	0 (1.5)	0.1 (0.9)	0.2 (0.8)	0 (1.3)	0 (0.9)
Depression	-0.2 (1.5)	-0.6 (1.0)	0 (1.8)	0.6 (1.0)	-0.6 (1.6)	-0.3 (1.1)
Hysteria	-1.2 (2.2)	-1.4 (2.1)	-0.8 (2.4)	-1.4 (2.6)	-0.8 (1.9)	-0.3 (2.2)
Alexithymia	2.3 (5.6)	0.6 (8.0)	3.4 (4.1)	4.0 (2.5) ⁶	1.2 (7.2)	-0.3 (5.3) ⁶

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Difference; I – III Measurement

Free floating anxiety	0.4 (1.6)	0.8 (2.0)	0.2 (1.3)	0.1 (1.5)	0.7 (1.7)	-0.3 (2.3)
Phobic anxiety	0.6 (1.7)	0.9 (1.1)	0.5 (2.2)	0.1 (2.3)	0.8 (1.3)	1.3 (1.6)
Obsessionality	0.6 (2.0)	0.3 (1.4)	0.9 (2.4)	0.1 (2.6)	0.9 (1.7)	0.1 (2.3)
Somatic anxiety	0.3 (1.3)	-0.3 (0.9)	0.4 (1.2)	1.1 (1.4) ⁷	-0.3 (1.0) ⁷	0.4 (0.7)
Depression	0 (1.6)	0.3 (2.1)	-0.3 (1.4)	0.5 (1.1)	-0.1 (1.7)	0.2 (1.6)
Hysteria	-0.4 (2.8)	-1.9 (2.0) ⁸	0.8 (2.7) ⁸	-0.5 (4.1)	-0.3 (1.9)	0.6 (2.8)
Alexithymia	2.7 (5.6) ⁹	3.8 (6.8)	2.2 (5.3)	2.6 (5.8)	2.9 (6.1)	-1.5 (4.8) ⁹

¹ less than 100 times swimming vs controls p=0.0233² more than 100 times swimming vs 100 or less times swimming p=0.0021³ less than 100 times swimming vs controls p=0.0237⁴ more than one year swimming vs less than one year swimming p=0.0076⁵ more one year swimming vs less than one year swimming p=0.0230⁶ less than 100 times swimming vs controls p=0.0409⁷ more than 100 times swimming vs less than 100 times swimming p=0.0160⁸ more than one year swimming vs less than one year swimming p=0.0265⁹ swimmers vs controls p=0.0456

ming, it could be concluded from the open individual answers that at least some had started winter swimming to get help for minor ailments and obtained relief, as well as improved subjective well-being with the cold water. Many WS regard the swimming as an option for the methods of ordinary medicine as estimated from their comments.

The main limitations of our study concerned the sizes of the samples and the way the groups were formed. Unfortunately, both groups were small and hence sound comparisons between males and females, for example, were not possible. Both groups were healthy which may be due to the selection effect. WS selected the controls themselves, and it may be that healthy persons have healthy friends. The persons who volunteer for this kind of study tend to be both physically and mentally healthy, active and extrovert. Most WS practised many types of sport in addition to winter swimming, but the same was true with controls.

The strengths lay in the methodology. Of the different methods for measuring alexithymia, the TAS-20 is the most widely used and obviously the most carefully validated. Its internal consistency, test-retest reliability, convergent, discriminant, and concurrent validity have been demonstrated to be good (19,20). The Finnish version of the scale has shown to be psychometrically correct (21). The CCEI is widely used in many countries and many languages, and the validity of the Finnish version has shown to be satisfactory (16). Both

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these methods measure psychopathology. However, when dealing with subjective experiences in health, unstructured, open questions may better reveal the phenomenon of interest.

Nevertheless, winter swimming is a good method for hardening oneself, and it can be also regarded as an easy way to keep oneself fit. A better ability to withstand stress generally also follows the hardening acquired by cold water. The results of the current study do not, however, justify clinicians to recommend winter swimming as an alternative treatment, although many WS have subjective experience of its benefits.

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