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Psychological and pedagogical features of winter swimming in the extreme climatic conditions of the Pavlodar Irtysh region

Abstract

This article examines the psychological and pedagogical features of winter swimming (morzhovanie) in the extreme climatic conditions of the Pavlodar Irtysh region. Pavlodar Irtysh is characterized by a harsh, sharply continental climate, which many consider a risk factor. The problem of strengthening the health of the population in regions with severe climatic conditions remains highly relevant in the modern scientific and applied agenda. Northern regions of Kazakhstan are characterized by long winter periods, significant negative air temperatures, and pronounced wind activity. Prolonged exposure to cold is traditionally considered an unfavorable environmental factor, increasing the risk of respiratory and cardiovascular diseases. At the same time, in recent years there has been a stable increase in interest in natural methods of hardening the body. One of the most radical and controversial methods is winter swimming (morzhovanie) – a short-term immersion in water with a temperature close to zero during the winter period.

Objective: To scientifically justify the features of morzhovanie in the conditions of the Pavlodar Irtysh region and determine its effect on the human body, taking into account regional specifics. To achieve this goal, the following tasks were set: to characterize the climatic features of the region, analyze the physiological responses of the body to cold stress, identify potential benefits and risks of winter swimming, and determine the social significance of this movement.

Methods: Theoretical methods, clinical-physiological methods, psychophysiological methods, pedagogical and sociological methods, experimental methods (questionnaire, observation, and expert interviews).

Keywords: winter swimming (morzhovanie), extreme climatic conditions, features, short-term immersion in water, body, cold stress, regional specificity.

Introduction

The health of the nation is one of the main priorities of the state policy of the Republic of Kazakhstan [2]. Pavlodar Irtysh is characterized by a harsh, sharply continental climate, which many consider a risk factor. However, there is a group of people who have turned the cold into their ally. These are winter swimming enthusiasts – the “morzh” (walrus). The article presents a comprehensive analysis of the features of winter swimming (morzhovanie) under the sharply continental climate of Northeastern Kazakhstan. The climate-geographical characteristics of Pavlodar region, the specifics of ice regime and wind load, the physiological mechanisms of body adaptation to cold water exposure, as well as the social aspects of the development of the winter swimming movement are considered. It has been demonstrated that, when following the principles of gradual adaptation and medical supervision, morzhovanie can serve as an effective means of hardening and strengthening health in extreme natural conditions [1]. In our region, where winter lasts almost five months and air temperature often drops below -30°C, the issue of body adaptation to cold is particularly acute [3]. Pavlodar Irtysh is characterized by a harsh, sharply continental climate, which many consider a risk factor.

The health of the nation is one of the main priorities of the state policy of the Republic of Kazakhstan [2]. In the conditions of our region, where winter lasts almost five months and air temperatures often drop below -30°C, the issue of the body's adaptation to cold becomes particularly acute [7]. The Pavlodar Irtysh region is characterized by a harsh continental climate, which many consider a risk factor. However, there is a group of people who have turned the cold into their ally. These are enthusiasts of winter swimming, known as “walrus.”

The article provides a comprehensive analysis of the features of winter swimming (ice swimming) under the conditions of the sharply continental climate of Northeastern Kazakhstan. It examines the climatic and geographical characteristics of the Pavlodar region, the specifics of the ice regime and wind load, the physiological mechanisms of the body's adaptation to cold water exposure, as well as the social aspects of the development of the winter swimming movement. It is demonstrated that, when the principles of gradual progression and medical supervision are observed, winter swimming can serve as an effective means of hardening and improving health in extreme natural conditions [3].

The issue of strengthening public health in regions with harsh climatic conditions remains highly relevant in both contemporary scientific and applied agendas. Northern territories of Kazakhstan are characterized by prolonged winter periods, significantly low air temperatures, and pronounced wind activity. Long-term exposure to cold is traditionally regarded as an adverse environmental factor that increases the risk of respiratory and cardiovascular diseases.

At the same time, in recent years there has been a steady increase in interest in natural methods of bodily hardening. One of the most radical and debated approaches is winter swimming – short-term immersion in water with temperatures close to zero during the winter period.

The aim of this article is to provide a scientific substantiation of the features of winter swimming in the Pavlodar Irtysh region and to determine its impact on the human body, taking into account regional specifics.

To achieve this aim, the following objectives were set:

1. To characterize the climatic features of the region.
2. To analyze the physiological responses of the body to cold stress.
3. To identify the potential benefits and risks of winter swimming.
4. To determine the social significance of this movement.

1. Climatic and Geographical Specificity of the Region

1.1 Sharply Continental Climate

The administrative center of the region – Pavlodar – is located in the zone of a sharply continental climate of the temperate belt. It is characterized by:

- a cold and prolonged winter (up to 5–5.5 months);
- an average January temperature of -15 to -17°C ;
- stable periods of frost reaching -30 to -35°C ;
- relatively low precipitation;
- a high frequency of winds of varying intensity.

The continental nature of the climate is reflected in significant seasonal temperature fluctuations. The winter period is accompanied by the formation of stable snow and ice cover, which creates favorable conditions for organizing ice holes for winter swimming [7].

1.2 The Role of the River Valley

The Irtysh River valley has a significant influence on the microclimate. Its geographical location facilitates the unobstructed penetration of Arctic air masses, intensifying frost conditions.

The wind factor plays a particularly important role. In scientific practice, the concept of “effective temperature” is used – an indicator that reflects the combined effect of air temperature and wind speed on human heat exchange. At an air temperature of -20°C and a wind speed of 10 m/s, the perceived temperature may correspond to -30°C or lower [6].

Therefore, winter swimming under these conditions is accompanied not only by exposure to cold water but also by intense convective heat loss after exiting the water [4].

1.3 Temperature Gradient

During the winter period, the water temperature in an ice hole averages $+2$ to $+4^{\circ}\text{C}$, while the air temperature can reach -30°C . Thus, a temperature gradient of approximately 30 – 34°C is formed.

Such a difference represents a powerful stress factor that activates the body's adaptive mechanisms. It is precisely the extremity of the combination of environmental parameters that determines the specificity of winter swimming in the region.

2. Physiological Mechanisms of Cold Adaptation

2.1 First Phase – Cold Shock

Sudden immersion in icy water causes an immediate reaction:

- spasm of peripheral blood vessels;
- redistribution of blood flow to vital organs;

- increased heart rate;
- intensified breathing.

This reaction is aimed at minimizing heat loss and maintaining the temperature of internal organs. In unprepared individuals, it may be accompanied by a temporary sensation of breathlessness and pronounced stress.

2.2 Hormonal Activation

Cold exposure triggers the release of adrenaline, noradrenaline, and endorphins. This explains the subjective feeling of бодрость (alertness), a surge of energy, and emotional uplift after swimming.

From a physiological perspective, short-term stress initiates an adaptation mechanism similar to the training effect in sports. Regular repetition of the procedure contributes to increased resistance of the body to adverse environmental factors [8].

2.3 Warming Phase

After exiting the water, vasodilation occurs along with the activation of heat production processes. The skin becomes red due to increased blood circulation.

With systematic practice, the following effects are observed:

- improvement of microcirculation;
- increased vascular tone;
- training of thermoregulation mechanisms.

However, exceeding the permissible time spent in the water may lead to hypothermia and impaired coordination.

3. Positive Effects and Risks

3.1 Potential Benefits

When the principle of gradual adaptation is observed, winter swimming may contribute to:

- a reduction in the frequency of seasonal respiratory diseases;
- strengthening of the cardiovascular system;
- normalization of the psycho-emotional state;
- development of stress resilience.

A positive effect on sleep quality and overall well-being is also noted.

3.2 Possible Contraindications

Despite its potential benefits, winter swimming has a number of limitations.

Contraindications include:

- severe cardiovascular diseases;
- pronounced hypertension;
- chronic inflammatory conditions;
- acute infectious diseases.

Under conditions of strong wind exposure, hypothermia of the head and extremities poses a particular risk. Therefore, the use of protective equipment (headwear, specialized footwear) and strict control of bathing duration are essential [8].

4. Social Aspect of Winter Swimming

A stable community of winter swimming enthusiasts has formed in the region. Regular group swims, themed events, and informational activities contribute to the popularization of a healthy lifestyle.

Thus, a study was conducted in January–February 2026 on the banks of the Irtysh River – a traditional gathering place for winter swimming enthusiasts. The choice of location was determined by the hydrological characteristics: the slow current increases safety, while the open floodplain intensifies wind exposure.

Study Results:

Analysis of the questionnaire data revealed the following statistics:

1. Age Structure:

- 40–60 years – 50 % (the largest group, considered the “core” of the community)
- 20–40 years – 25 % (active working individuals)
- Youth and adolescents (up to 20 years) – 15 %
- Pensioners (over 60 years) – 10 %



Figure 1 – Age Structure of Pavlodar “Walruses”

1. Hardening Experience:
- More than 5 years – 40 % of respondents
 - From 1 to 5 years – 35 %
 - Beginners (first season) – 25 %

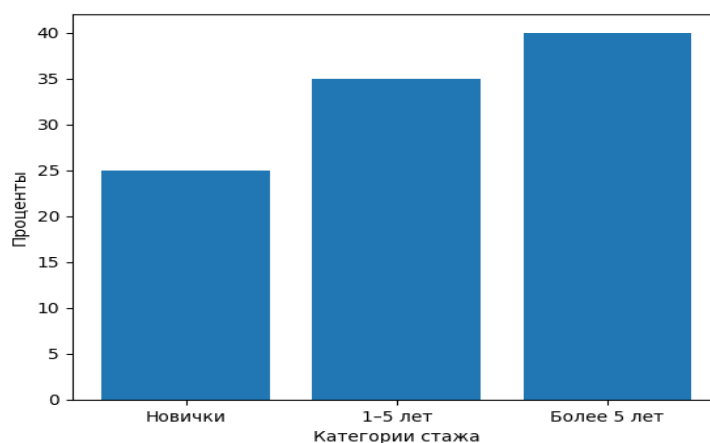


Figure 2 – Hardening Experience

1. Motivation (multiple answers allowed):
- “Strengthening immunity / stopped catching colds” – selected by 70 % of respondents
 - “Emotional relief / stress management” – 20 %
 - “Testing willpower / sports interest” – 10 %

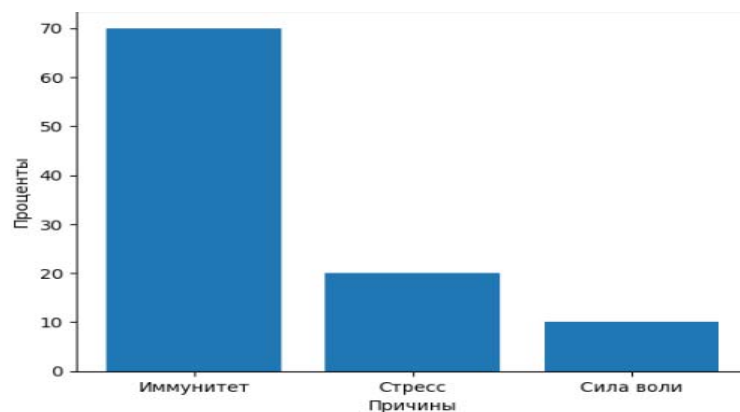


Figure 3 – Motivation for Swimming Activities

The conducted study allowed the following evidence-based conclusions to be drawn:

1. Winter swimming in the Pavlodar Irtysh region is a socially stable and expanding phenomenon.

2. The climatic conditions of the region objectively fall into the category of extreme (temperature gradient of 34°C; wind-chill index up to -47°C).

3. Systematic hardening is associated with a reduction in the frequency of seasonal illnesses.

The study allows for the general conclusion that the climatic conditions of Northern Kazakhstan should not be considered solely as an adverse or threatening factor. On the contrary, with a rational and controlled approach, the natural environment of the region can serve as an effective tool for enhancing the body's functional reserves.

For the safe organization of winter swimming under sharply continental climatic conditions, it is advisable to follow these principles:

- preliminary consultation with a physician;
- gradual lowering of the temperature during hardening procedures;
- brief immersion in water (10–60 seconds for beginners);
- mandatory availability of warm clothing and hot drinks;
- swimming only in designated and equipped locations.

Consistency and discipline are key factors for safety [5].

The climatic conditions of the Pavlodar Irtysh region are characterized by a high degree of extremity during the winter period. Low air temperatures, wind exposure, and the significant temperature contrast between water and air create pronounced cold stress.

With a rational approach, winter swimming can serve as an effective means of training the body's adaptive mechanisms. At the same time, ignoring medical recommendations can lead to adverse consequences.

Therefore, winter swimming in this region should be regarded as a controlled health-promoting activity that requires a scientific approach and strict adherence to safety principles.

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Павлодар Прииртышьясының экстремалды климаттық жағдайларында моржеванудің психологиялық-педагогикалық ерекшеліктері

Мақалада Павлодар Прииртышьясының экстремалды климаттық жағдайларында моржевание (қысқы жүзу) психологиялық-педагогикалық ерекшеліктері қарастырылады. Павлодар Прииртышьясы қатал, өткір континенталды климатымен ерекшеленеді, бұл көптеген адамдар үшін тәуекел факторы болып есептеледі. Қатты климаттық жағдайлары бар аймақтардағы халықтың денсаулығын нығайту мәселесі қазіргі ғылыми және қолданбалы күн тәртібінде өзекті болып қала береді. Қазақстанның солтүстік өңірлеріне ұзақ қысқы кезеңдер, ауа температурасының елеулі теріс мәндері және айқын жел белсенділігі тән. Салқынға ұзақ уақыт әсер ету дәстүрлі түрде қоршаған ортаның қолайсыз факторы ретінде қарастырылады, бұл суық тию және жүрек-қан тамырлары ауруларының қауіпін арттырады. Сол уақытта соңғы жылдары организмді табиғи жолмен шынықтыру әдістеріне тұрақты қызығушылық байқалады. Солардың ішіндегі ең радикалды әрі дискуссиялық әдіс – моржевание, яғни қысқы кезеңде температурасы нөлге жақын суға қысқа мерзімді ену.

Мақсат: Павлодар Прииртышьясының жағдайында моржеваниенің ерекшеліктерін ғылыми тұрғыда негіздеу және оның адам ағзасына әсерін аймақтық спецификаны ескере отырып анықтау. Мақсатқа жету үшін келесі міндеттер қойылды: аймақтың климаттық ерекшеліктерін сипаттау, ағзаның суық стрессіне физиологиялық реакцияларын талдау, қысқы жүзудің әлеуетті артықшылықтары мен қауіптерін анықтау, бұл қозғалыстың әлеуметтік маңыздылығын белгілеу.

Әдістер: теориялық әдістер, клинико-физиологиялық әдістер, психофизиологиялық әдістер, педагогикалық және әлеуметтік зерттеу әдістері, эксперименттік әдістер (анкета жүргізу, бақылау және сараптамалық сұхбат).

Түйінді сөздер: моржевание, экстремалды климаттық жағдайлар, ерекшеліктер, суға қысқа мерзімді ену, ағза, суық стресс, аймақтық специфика.

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Психолого- педагогические особенности моржевания в экстремальных климатических условиях Павлодарского Прииртышья

В статье рассматриваются психолого-педагогические особенности моржевания в экстремальных климатических условиях Павлодарского Прииртышья. Павлодарское

Прииртышье отличается суровым резко континентальным климатом, который многие считают фактором риска. Проблема укрепления здоровья населения в регионах с суровыми климатическими условиями сохраняет высокую актуальность в современной научной и прикладной повестке. Для северных территорий Казахстана характерны продолжительные зимние периоды, значительные отрицательные температуры воздуха и выраженная ветровая активность. Длительное воздействие холода традиционно рассматривается как неблагоприятный фактор среды, повышающий риск простудных и сердечно-сосудистых заболеваний. Одновременно в последние годы наблюдается устойчивый рост интереса к естественным методам закаливания организма. Одним из наиболее радикальных и дискуссионных способов является моржевание – кратковременное погружение в воду температурой, близкой к нулю, в зимний период.

Цель: научно обосновать особенности моржевания в условиях Павлодарского Прииртышья и определить его влияние на организм человека с учётом региональной специфики. Для достижения цели поставлены следующие задачи: охарактеризовать климатические особенности региона, проанализировать физиологические реакции организма на холодовой стресс, выявить потенциальные преимущества и риски зимнего плавания, определить социальную значимость данного движения.

Методы: Теоретические методы, клинико-физиологические методы, психофизиологические методы, педагогические и социологические методы, экспериментальные (анкетирование, наблюдение и экспертное интервью).

Ключевые слова: моржевание, экстремальные климатические условия, особенности, кратковременное погружение в воду, организм, холодовой стресс, региональная специфика.

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