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EVALUATING THE IMPACT OF THE COVID-19 PANDEMIC ON THE ATHLETES: STUDY PROTOCOL

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Abstract

Background. The global pandemic situation associated with the spread of COVID-19 virus infection has affected elite sport in all fields. All sporting events, including the Summer Olympics, have been postponed or cancelled. Restrictions caused by COVID-19 have affected the psycho- emotional health, nutrition as well as physical activity of athletes.

The aim of this study is to develop an evidence-based model for the organization of medical and psychological care in high-performance sport aimed at minimizing the negative impact of the COVID-19 pandemic.

Materials and methods. The type of research chosen: descriptive / cross-sectional study using sociological research methods, such as qualitative study - interviewing sport physicians and athletes with semi-structured interview guide and quantitative study method by using the validated questionnaire.

Conclusion. The developed model of organization of medical and psychological care in high-performance sport will allow timely and effective assessment of the psycho-emotional and physical health of athletes in order to identify problems early and take appropriate measures to counteract the effects of the pandemic.

Keywords: athlete, medical support, sports physician, COVID-19, high performance sport.

Резюме

ОЦЕНКА ВЛИЯНИЯ ПАНДЕМИИ COVID-19 НА СПОРТСМЕНОВ: ПРОТОКОЛ ИССЛЕДОВАНИЯ

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Актуальность. Глобальная пандемическая ситуация, связанная с распространением инфекции вируса COVID-19, затронула профессиональный спорт во всех областях. Все спортивные мероприятия, включая летние Олимпийские игры, были отложены или отменены. Ограничения, вызванные COVID-19, повлияли на психоэмоциональное здоровье, питание, а также физическую активность спортсменов.

Цель исследования: разработка научно обоснованной модели организации медицинской и психологической помощи в спорте высших достижений, направленной на минимизацию негативного влияния пандемии COVID-19.

Материалы и методы. Тип выбранного исследования: описательное / кросс-секционное исследование с использованием социологических методов исследования, таких как качественное исследование - опрос врачей, спортсменов с использованием полуструктурированного интервью и количественный метод исследования с использованием валидизированной анкеты.

Заключение. Разработанная модель организации медико-психологической помощи в спорте высших достижений позволит своевременно и эффективно оценивать психоэмоциональное и физическое здоровье спортсменов с целью раннего выявления проблем и принятия, соответствующих мер по противодействию последствиям пандемии.

Ключевые слова: *спортсмен, медицинское обеспечение, спортивный врач, COVID-19, спорт высших достижений.*

Түйіндеме

COVID-19 ПАНДЕМИЯСЫНЫҢ СПОРТШЫЛАРҒА ӘСЕРІН БАҒАЛАУ: ЗЕРТТЕУ ХАТТАМАСЫ

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Өзектілігі. COVID-19 вирустық инфекциясының таралуына байланысты жаһандық пандемиялық жағдай барлық салалардағы кәсіби спортқа әсер етті. Барлық спорттық іс-шаралар, соның ішінде Жазғы Олимпиада ойындары кейінге қалдырылды немесе тоқтатылды. COVID-19 туындаған шектеулер спортшылардың психоэмоционалдық денсаулығына, тамақтануына және физикалық белсенділігіне әсер етті.

Бұл зерттеудің **мақсаты** COVID-19 пандемиясының теріс әсерін азайтуға бағытталған жоғарғы нәтижелі спортта медициналық-психологиялық көмекті ұйымдастырудың дәлелді үлгісін әзірлеу болып табылады.

Материалдар мен әдіс-тәсілдер. Таңдалған зерттеу түрі: әлеуметтанулық зерттеу әдістерін қолданатын сипаттамалық/кросс-секциялық зерттеу, мысалы, сапалы зерттеу – жартылай құрылымдық сұхбат нұсқаулығымен спорт дәрігерлермен және спортшылармен сұхбат алу және расталған сауалнаманы пайдалану арқылы сандық зерттеу әдісі.

Қорытынды. Жоғары нәтижелі спортта медициналық-психологиялық көмекті ұйымдастырудың әзірленген үлгісі мәселелерді ерте анықтау және пандемия салдарына қарсы тұру бойынша тиісті шараларды қабылдау үшін спортшылардың психоэмоционалды және физикалық денсаулығын уақтылы және тиімді бағалауға мүмкіндік береді.

Түйінді сөздер: *спортшы, медициналық қолдау, спорт дәрігері, COVID-19, жоғары нәтижелі спорт.*

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Introduction

A global emergency characterized by a respiratory disease called COVID-19 (coronavirus infection) spreads worldwide in early 2020 [7]. Recommendations from public health services and government measures during the COVID-19 pandemic resulted in numerous restrictions on daily life, including social distancing, isolation and confinement at home. While these measures are essential to contain the spread of COVID-19 and protect public health, the results show that they alter physical activity and dietary behavior in ways that threaten health [3].

Sport has also been negatively affected: ongoing championships have been suspended and major international events were postponed (e.g. Summer Olympics, UEFA European Football Championship) [6, 9]. For the first time since World War II, all Olympic athletes were forced to change their competitions schedule [10]. In addition, most athletes are forced to train at home, on their own and mostly without the supervision of coaches and sports physicians [17].

Due to the quarantine restrictions associated with COVID-19, athletes are subject to the detraining factor, i.e. partial or complete loss of morphological and physiological adaptation caused by training due to insufficient and/or inappropriate training stimuli [12].

According to a study in South Africa, more than half of athletes admitted to deterioration in their diet, with women significantly more than men. Excessive carbohydrate intake was significantly greater than excessive consumption of carbonated drinks. Given the significant inadequacy of nutrition during the lockdown, it seems appropriate to implement the recommendations of a sports nutritionist both during isolation and after isolation [14].

Ensuring the mental health and emotional well-being of athletes is key. Continued training is an important component to protect the mental health of the athlete, especially to reduce the risk of anxiety and depression [15, 16]. Many elite athletes have undergone a long period of rigorous preparation for international competitions (such as the Tokyo Olympics), including participation in special

training camps, acclimatization strategies and participation in special qualifying events. For some, this opportunity to compete will disappear and never appear again; thus, the sudden cancellation or postponement of these events and competitions, being an immediate necessity and clearly logical from an international health perspective, may have immediate and important implications for the mental health of the athletes [21, 22].

All athletes had understandable uncertainties and fears about when qualifying competitions would be held, how to maintain fitness and train in the present conditions. Tangible fears of the athletes include:

- fear that they will be less physically prepared for the upcoming sporting events;
- the fear that they are at a competitive disadvantage;
- disease;
- social exclusion;
- lack of regular medical support and support services;
- emotional state if someone they know (friends, family or teammates) falls ill;
- thoughts on the life direction: what to do if the Games are postponed or cancelled; whether to continue; next steps in general.

Understanding the seriousness of the effects of COVID-19 on the psycho-emotional well- being of athletes, foreign experts have developed special programs for their athletes and established centers to provide specialized mental health support for athletes [8].

Sports medicine physicians and other accompanying staff are in a unique position to identify physical and psycho-emotional health problems early on. First and foremost, they should have a comprehensive understanding of how problems usually manifest themselves in athletes and what appropriate measures should be taken in each individual case [5].

Many recent studies have focused on the health of athletes during the COVID-19 pandemic [13, 14, 18, 19], but more research is needed to identify and test optimal strategies for the detection, treatment and prevention of physical and psycho-emotional health problems in competitive athletes caused by the effects of the pandemic. The priorities recommended by the international sporting communities are the development of validated assessment tools and remote monitoring for early detection of psycho-emotional health and physical health problems in athletes, from which effective interventions can be developed.

Thus, following an analysis of the literature, we have developed a scientific research strategy to develop a model of medical and psychological care for athletes in elite sport in the event of pandemics or similar emergencies.

The aim of this study is to develop a science-based model for the organization of medical and psychological care in elite sport aimed at minimizing the negative impact of the COVID-19 pandemic.

The objectives of the research include: studying the existing types of organization of medical and psychological help in the elite sports in the Republic of Kazakhstan and abroad; studying the frequency and extent of medical and psychological health monitoring of athletes before and during the COVID-19 pandemic; analysis of the affect of the COVID-19 pandemic on the psycho-emotional health, eating behavior, and physical activity level of athletes; developing, implementing and evaluating the model of organization of medical and psychological help for athletes.

The integrated scientific research is conducted using the methodology outlined in Picture 1.

In the first task, we will study the organization of health care and psychological support in high performance sports in the Republic of Kazakhstan.

Object of the study: A study of orders and other governing documents regulating the organization of the medical and physiological support of elite athletes as well as a review of the information sources in the search engines Scopus, Web of Science, MedLine, PubMed, Google Scholar, e-Library.ru, CyberLeninka was conducted. Evidence-free data with unclear or ambiguous conclusions, repetitive publications, conference proceedings and clinical cases were not included in the review.

In the second task the frequency and extent of medical and psychological health monitoring of athletes before and during the COVID-19 pandemic will be studied. In order to reach the goal of this study we will conduct key informants' interviews of the heads of clinics, serving the athletes. Prior to the interview, an explanation of the purpose, methodology and confidentiality of the study will be given to the participants. Participants will be asked to provide informed consent to participate in the study. The informed consent will contain the name of the study, an introduction to the study and information about the duration of the study.

Object of study: male and female heads of medical organizations serving elite athletes in the Republic of Kazakhstan.

Inclusion criteria for the study:

- Heads of medical organizations serving elite athletes.
- Presence of signed informed consent for voluntarily participation in interviews in writing or electronically.

Exclusion criteria:

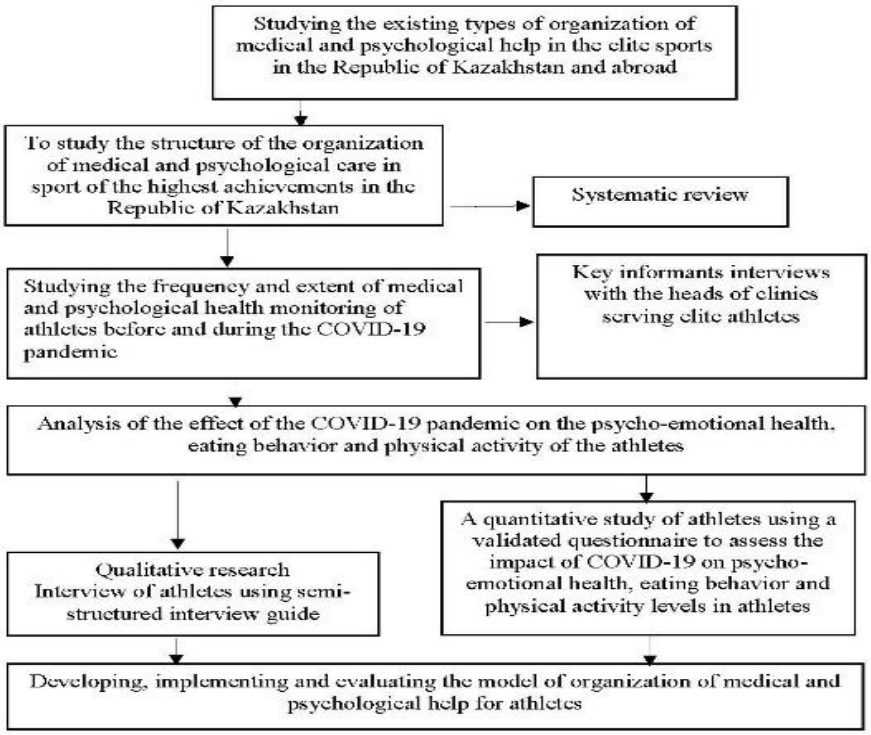
- Heads of clinics serving the athletes who have not signed a written or electronic informed consent form to voluntarily participate in an interview.

In order to perform qualitative research in the third task, a cross-sectional study will be conducted using a sociological research method: interviewing 20 athletes of the Kazakhstan national team, who were qualified for the Summer Olympic Games in Tokyo. To collect data, athletes will be interviewed using a semi-structured interview guide. This interview guide was developed in English and translated into Kazakh and Russian by independent translators. It was then translated back into English by another translator to eliminate discrepancies. The interview guide was previously pilot tested for content validity and question validity. During the pilot test, three athletes who met the research inclusion criteria were interviewed. To avoid participant bias, the athletes who participated in the pilot study will not be included in the main study.

Object of study: male and female athletes on the roster of full-time national teams of the Republic of Kazakhstan in Summer Olympic sports.

Inclusion criteria for the study:

- male and female athletes on the roster of full-time national teams of the Republic of Kazakhstan in Summer Olympic sports.



Picture 1. Main stages and methods of the study.

• Athletes qualified for the 2021 Summer Olympics in Tokyo.

• Presence of signed informed consent for voluntarily participation in interviews from athletes in writing or electronically.

Exclusion criteria:

• Athletes who are not on the roster of Kazakhstan's full-time national teams for Summer Olympic sports are excluded from the study.

• Athletes who are not licensed to compete at the 2021 Summer Olympics in the city of Tokyo.

• Athletes who have not signed a written or electronic informed consent form to voluntarily participate in an interview.

The following themes and questions were used in developing the questions for the semi- structured in-depth interview of athletes:

– COVID-19 and the postponement of the Olympics: How have Kazakhstani athletes survived the postponement of the Tokyo Olympics?

– The impact of COVID-19: how has the COVID-19 pandemic affected the psycho- emotional health, eating behavior and physical activity of Kazakhstani athletes?

– COVID-19 and preparation for the Olympics: How has COVID-19 affected the preparation of Kazakhstani athletes, sports physicians and coaches for the Tokyo Olympics?

Prior to the survey, an explanation of the purpose, methodology and confidentiality of the survey will be given to the participants.

Participants will be asked to provide informed consent to participate in the study. The informed consent will contain the name of the study, an introduction to the study and information about the duration of the study. The expectations, risks, benefits, rights of participants and the confidentiality policy regarding the data collected will also be stipulated. The completed informed consent forms will be signed and dated by the interviewer.

In order to fulfil second part of the task 3 of the study, a cross-sectional study will be conducted using a sociological research method - a questionnaire survey of athletes.

Object of study: male and female athletes on the roster of full-time national teams of the Republic of Kazakhstan in Summer Olympic sports.

Inclusion criteria for the study:

• Male and female athletes on the roster of full-time national teams of the Republic of Kazakhstan in Summer Olympic sports.

• Athletes over 18 years.

• Presence of signed informed consent to voluntarily participate in the survey in writing or electronically.

• Internet access to complete the online questionnaire.

Exclusion criteria:

• Athletes who are not on the roster of Kazakhstan's full-time national teams for Summer Olympic sports are excluded from the study.

• Athletes under 18 years.

• Athletes who have not signed a written or electronic informed consent form to voluntarily participate in the survey.

According to the list of national teams of the Republic of Kazakhstan for summer Olympic sports, approved by the Committee for Sports and Physical Culture of the Ministry of Culture and Sports of the Republic of Kazakhstan, 695 male and female athletes are registered [1]. In connection with the upcoming Tokyo Olympic Games to be held in 2021, it will be appropriate to conduct research involving athletes in Summer Olympic sports, such as badminton, basketball, boxing, wrestling, cycling, water polo, volleyball, handball, golf, rowing, canoeing, judo, karate, equestrian sports, modern pentathlon, athletics, table tennis, sailing, swimming, diving, synchronized swimming, beach

volleyball, trampoline, gymnastics, shooting, trap shooting, rugby, rock climbing, football, archery, taekwondo, tennis, triathlon, weightlifting, fencing, field hockey, artistic gymnastics [2].

A general population of 695 male and female athletes. Epi Info sample size calculation: 248. Taking into account the drop-out or withdrawal of participants from the study, 30% must be added to the random sample. The random sample is therefore 322 athletes.

Data will be collected from athletes using a questionnaire developed on the basis of similar studies and adapted for data collection according to the purpose and objectives of the study.

The questionnaire will consist of the following sections:

- Identifying data
- Demographic information
- Assessment of psychological comfort and potential anxiety
- Questions on nutritional behavior and the use of food supplements, medications
- Identifying fear of COVID-19
- Questions about physical activity during and after lockdown.

Validated questionnaires such as the Hospital Anxiety and Depression Scale [23] and the SCOFF Eating Disorders Questionnaire [4], The Fear of COVID-19 Scale [11] were used in the development of the questionnaire to obtain data according to the aim of the study, and the questions from the questionnaire used in the South African Athletes' Study were also be used [14].

Prior to the study, the questionnaire was piloted. Based on the observations and comments of the participants interviewed, the questionnaire was amended to ensure that the questions were clearly understood by the participants. The average time taken to complete the questionnaire was also determined.

Questionnaires will be administered to study participants after obtaining individual informed consent to collect data for the purpose of this study. Each study participant will be given a research consent form to read and sign in case of consent. Once informed consent is obtained from respondents, they will be provided with a link to complete the online questionnaire in Google forms, via Whatsapp, Telegram or email. All participants will be provided with the following information:

- the aim of the study;
- what is expected of each person studied;
- the expected benefits and risks for the participant;
- the fact that participation is voluntary and the participant can withdraw from the study at any time without negative consequences;
- the confidentiality of the participants will be ensured, as identifying information (names, ...) will not be collected.

Analysis and statistics

All data entered into Google forms will be exported into MS Excel and further statistical analysis will be carried out using SPSS software version 20.0. The database will contain 7 sections: identification data, demographic data, data for psychological comfort and potential anxiety assessment, data for the SCOFF Eating Disorders Screening, data on athletes' eating behavior, including use of supplements, medication and use of prohibited substances, data for identifying fear of COVID-19, data on physical activity levels during and after isolation. The variables will be analyzed and compared according to their performance.

Descriptive analysis will be carried out by presenting the distribution of variables, indicating means and standard deviations or medians and ranges for continuous variables and frequencies for categorical variables.

A statistical $\chi 2$ test will be used to compare answers to the research questions between female and male athletes from different sports. $P<0.05$ will be considered statistically significant.

Mean scores will be compared across groups of athletes using a two-sample t-test. Linear regression will be used to compare the variables associated with the mean score.

The data collected in the qualitative research will be analyzed using inductive thematic analysis, in which key themes and sub-themes will be identified. We then will conduct a detailed analysis of each identified theme throughout the analysis process. MAXQDA software version 2020 will be used for the analysis [20].

The ethical approval of the Ethics Committee of the Kazakhstan Medical University “Kazakhstan School of Public Health” was received on 31st May, 2021 (Protocol No: 140).

Expected results

The analysis of the impact of the COVID-19 pandemic on the psycho-emotional health of athletes, eating behavior and physical activity levels of athletes will enable the organizations concerned to improve their skills in risk assessment and medical management of athletes based on the experience gained from the negative impact of COVID-19, and will also help us to develop a model for organizing medical and psychological care in elite sport which will enable more effective psychological, medical and anti-doping care.

Data security and privacy protection

Confidentiality of participants will be ensured during the study. All participants will be assigned an identification number by the research team to mark questionnaires and interviews. The link between the identification number and the participant will be known to the research team and will not be disclosed to anyone else. Participants' personal data (names, surnames) will not be entered into any databases used during the study. Documentation will be kept out of reach of others.

When submitting data to external agencies or institutions for data analysis, such data will only include the study identification number without any identifiable human information.

In order to prevent COVID-19 coronavirus infection among the study population, personnel with appropriate medical training will be involved in the conduct of this study and will observe all preventive measures during the study. At the same time, additional training on infection prevention measures will be provided: hand hygiene, proper use of necessary personal protective measures, as well as providing all study participants with individual ballpoint pens, gloves, masks if necessary, to minimize the risk of both their own infection and the spread of infection to other study participants.

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