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# **Mathematical Modelling of the Multifactorial Influence of Striking Fragments on the Dynamics of the Rehabilitation Processes of the Wounded**

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## **Abstract**

The article analyses the possibility of solving an important scientific and technical problem that is relevant for the security and defence of any country where natural and man-made disasters, military conflicts and other emergencies occur, in which penetrating injuries of people occur. The article reports on the possibility of improving the efficiency of the rehabilitation technology for patients with penetrating gunshot wounds by reducing the rehabilitation period using modern methods of medical diagnostics, mathematical modelling and statistical methods for processing biomedical information. The scientific idea underlying the conducted research is that dynamic changes of a set of biomedical indicators depend not only on the time of their observation, but also on the levels of those physical factors that characterize physical parameters: temperature and dynamics of fragments. As a working hypothesis, in this case, it is possible to consider the inverse task, in which it is possible to solve the problem of assessing the levels of physical factors characterizing fragments using measurements of biomedical indicators during the initial examination of the wounded. In the paper, the authors substantiated the possibility of using primary biomedical measurements to assess the physical characteristics of fragments. This, in turn, makes it possible to take into account the characteristics of the



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physical impact of fragments on the dynamics of changes over time in biomedical indicators characterizing the treatment, and will lead to a reduction in rehabilitation time.

*Keywords: medical diagnostic, disaster medicine, penetrating gunshot wounds, biomedical indicators, mathematical modelling, rehabilitation processes, wounded.*

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