thod as MOC measuring in the test of gradually increasing load shows the highest efficiency coefficients at stayers compared to sprinters. But can it say for a worse physical condition of sprinters (having the same category as stayers do)? The answer is negative because physical efficiency measurement of the same sportsmen in specific zones of relative potency shows that sprinters excel with maximal potency coefficients in the zone of anaerobic energy production; and stayers exercise maximal muscular power in the zone of aerobic and combined energy production, testifying that that the caliber of both sprinters and stayers is defined by the predominant power supply source development degree and cannot be esteemed by general physical efficiency measurements. Really, if general physical efficiency (esteemed on the MOC showings) is defined by the final efficiency value, physical efficiency found out in the concrete zone of relative potency checks the development of the concrete bioenergy source and, therefore, bears more detailed information about the profile of energetic metabolism and allows detecting the predominant type of power supply. This confirms the idea that for effective trackmen's work-out session planning and physical efficiency diagnostics one should judge from the analysis of the results of a large number of tests. (Volkov N.I., 1989; Volkov N.I., Volkov A.N., 2004): gradually increasing load test for an integrated estimation of the maximum of aerobic and anaerobic capacities; critical power holding test for aerobic holding capacity estimation; single ultimate work test for glycolytic anaerobic power estimation; repeated ultimate work test for glycolytic anaerobic holding capacity estimation; ultimate anaerobic power test for anaerobic alactate capacity estimation; ultimate power reload test for alactate anaerobic holding capacity estimation. As a result of carrying out all these tests one can obtain an adequate valuation of physical fitness of a trackman – the physical fitness presupposing both general physical efficiency and all kinds of special working capacity data.

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HISTORY AND PROSPECTS OF SHAPE MEMORY ALLOYS APPLICATION IN SCIENCE, ENGINEERING AND MEDICINE

Muslov S.A., Styureva G.M.
Moscow State Medical Stomatological University, Moscow, Russia

In latter days multifunctional predetermined-properties materials – the ones, which can change their properties under the effect of external factors and operation conditions (temperature, mechanical loading, etc.), are finding more and more wider application in science, engineering and medicine. Certainly, the alloys with unique and most recently unknown physical and mechanical properties – thermomechanical shape memory effect (TME) and superelasticity (SE), refer to these materials. These alloys are able to reset unusually large inelastic deformations, show rubber-like behavior and damping properties, produce considerable stresses, etc., according to the predetermined program. It is generally recognized that the most vivid and the best representative of SE TME alloys is the intermetallic compound on the base of titanium nickelide NiTi – nitinol.

The application of shape memory super-elastic materials has allowed improving traditional properties and obtaining brand new functional ones of constructions having expanded their practical application areas radically. Non-detachable mechanical joints, drives, heat engines, fire alarms, various medical devices and instruments, vascular implants and filters, valves, occluders, bone implants, papillotomes, gallstone and urolith extractors, pulp extractors, hernioplasty meshes, etc., - these are a small part of these "intelligent" materials typical application examples.

During the last two-three decades in Russia and other technologically developed countries the shape memory alloys' application grows. On the results of a great number of investigations the international conferences ICOMAT, ESOMAT, EUROMAT, SMST, SMM, SMART, KUMICOM and others are held. A lot enough monographs and publications of fundamental and applied character testifying to considerable achievements in the sphere of titanium nickelide use appeared in the press. By now a great amount of patents on TME alloys, devices and products have been given. The most worked ideas and elaborations have reached the level of gross production, a definite part of products being made commercially. In spite of intent interest to these materials the information about the forecast application spheres of the last very often is incomplete or is contained in not easily accessible sources. The lack of special reference and bibliographical information on the given theme restricts the possibilities of scientific workers and engineers while solving concrete applied problems. The present paper informs about this gap compensation in terms of the patent base – one of the electronic library (EL) *e*SM@ divisions "Shape Memory Alloys Application In Science, Engineering And Medicine", creation. The base comprehends all the certificates of authorship and both native and foreign patents on the TME alloys from the date of their opening in 1960 up today. The resource has been registered in the Russian record of creation and utilization projects of the EL under the notion of "Information resources collection creation" and in electronic resources exchange scientific net.

The findings can serve a valuable educational and informative support for a community of specialists. The positive dynamics of the invention work results on the titanium nickelide application in medicine in Russia and abroad has been analyzed.

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INFECTIONS AND ALLERGY

Parakhonsky A.P.
Kuban medical university
Krasnodar, Russia

The immune response to antigenic stimulation represents the outcome of an integrated network of cells and mediators as well as of complex genetic-environmental interactions. Accordingly, it is quite reasonable to expect that immune responses to allergens and to bacterial, viral or parasitic antigens can influence each other.

The Thl/Th2 paradigm certainly represents an important reading key for a better understanding of the links between infections and allergy, where many bacterial and viral antigens preferentially induce a Thl-type response whereas parasites and allergens preferentially elicit a Th2-type response. However, explaining epidemiological data of associations between allergic and infectious diseases on the basis of the Thl/Th2 paradigm only is quite simplistic because of the many confounding factors influencing the final clinical status of subjects in epidemiological surveys. In fact, individual immune responses in vivo to allergens and infectious agents may vary also depending on the type and dose of antigenic stimulation as well as on the time and site of immune experiences.

While the relationships between parasitic infections and allergy are still controversial, a negative association between some bacterial or viral infections and allergic diseases has been reported by several studies. These negative associations as well as data emerging from studies of cohorts of allergic subjects (socioeconomic status, size and birth order effect) as well as from studies in population samples with different lifestyle provide support to the "hygiene hypothesis" (Strachan, 1989) suggesting that the reduced exposure to infectious agents during early infancy might represent a major factor for a prevalent Th2 polarization and the observed increasing prevalence of allergic diseases.

However, extensive evidence has been accumulated both in prospective and retrospective studies indicating, on the contrary, that some respiratory viral infections in childhood (e.g. RSV infections) are associated with a higher prevalence of allergy and asthma later in life, although it is not clear whether viral infections favour sensitisation or whether allergic subjects who experience respiratory viral infections develop asthma more frequently than non atopics. Certainly, rhinovirus infections have been proven to be a major cause of exacerbations of wheezing and of hyper responsiveness of nasal and bronchial mucosa in both rhinitic and asthmatic patients. On the other hand, allergy can favour infections. In fact, ICAM-1 — a major receptor for human rhinovirus — is overexpressed in allergic inflammation, even in sub-clinical forms.

Our recent epidemiological study of exposure to food borne or orofecal microbes versus airborne viruses in relation to atopy and allergic asthma, might suggest a possible interpretation of the controversial issue whether infections favour or protect from allergy as well as of the inconsistencies impinging on the hygiene hypothesis. In fact, in out study food borne and orofecal exposure to microbes but not respiratory viral infections are associated with a lower prevalence of sensitisation and allergic diseases. Accordingly, the composition of the gut microflora or a high turnover of microbial products stimulating gastro-intestinal path, rather than infections diseases, might have a relevant role in protecting from atopy. Should this interpretation prove correct, mimicking a microbial education of the immune system might represent a new fascinating strategy to prevent allergic diseases and to revert the epidemic trend of atopy and allergic asthma.

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ROLE XANTHINEOXIDASE IN PATHOGENESIS OF THE GOUT AND ARTHRITISES

Parakhonsky A.P.
Kuban medical university
Krasnodar, Russia

Gout is a disease barely investigated at the present time. We know its cause, uric acid, we know the enzyme that converts purines to uric acid, xanthineoxidase, and we have an inhibitor, allopurinol, which acts as an effective preventative agent. However, there are a series of unanswered questions outstanding. The first is why is the relationship between the plasma uric acid and the development of gout so poor? For instance, in chronic renal failure uric acid levels are very significantly elevated, but gout a relatively uncommon problem. Secondly, why is gout a joint disease and why does uric acid not precipitate everywhere else? The solubility of uric acid in synovial fluid is no greater than that of plasma. Perhaps the clearance of uric acid from the joint is the problem, but there are other membrane systems where one