Abstract

Personalised Nutritition – No Two People Eat Alike

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While post-war food policy focused on supply security, today's society finds itself confronted with opposing challenges. An increased energy intake, caused by changed food habits as well as a lack of exercise and the decline in energy needs with increasing age is not sufficiently addressed by many current diet concepts. It is therefore necessary to rethink strategy: personalised nutrition reflects the current scientific, technological and societal demand to promote health not merely through standardised strategies, but also through individualised optimisation. This takes place through a combination of biological, genetic, epigenetic, psychological and social aspects, because no two people eat alike.

Digitalisation: the driving force for prevention and therapy

Personalised nutrition concepts have long been established in the therapeutic field, such as in the treatment of diabetes, lipid metabolism disorders and oncological illnesses, for instance. They are increasingly supported by digital health applications (DiGA). Digitalisation is therefore an important factor in the data-based, efficient and patient-oriented implementation of nutrition recommendations. Furthermore, personalised nutrition is showing great potential when it comes to the prevention of non-communicable diseases such as obesity. Apps, wearables, AI-based programs and other technological advancements allow for the continuous collection of individual health and behavioural data, thus forming the basis for individualised recommendations and interventions. Studies such as Food4Me demonstrate that personalised digital interventions are significantly more effective in improving nutritional quality than generic recommendations. Biomedical findings like microbiota modulation, genetically differentiated recommendations for fatty acid intake and epigenetically informed modulation of micronutrients are also paving the way for new and evidence-based prevention options. They are complemented by behaviour-oriented approaches as people are known to differ in terms of motivation, nutritional knowledge, amount of exercise and health awareness. Individualised communication strategies and emotionally engaging measures, for instance gamification or nudging, aid in addressing and motivating people of all lifestyles and diets.

Diet recommendations for enhanced performance

In the field of performance optimisation, personalised diets are becoming increasingly relevant. Not only is exercise of high social significance in Germany but it also makes a considerable contribution to health promotion and prevention. A targeted supply of macro- and micronutrients, tailored to individual factors such as training intensity and energy consumption, not only has a preventative effect, but also has a chance of enhancing performance. Another important aspect is hydration, as it helps prevent drops in performance and accelerate recovery when tailored to individual aspects such as gender, sodium loss or sweat rate. The deliberate use of substances like caffeine or beetroot, again administered according to individual factors such as weight and fitness level, can also have a positive effect on endurance and muscle strength – and thus on athletic performance in general. Personalised nutrition therefore not only helps to prevent disease, but also to optimise physical performance.

Towards a digitally supported and health-oriented diet

To ensure an optimal response toward changed dietary habits and social developments, nutritional recommendations should aim for a more healthoriented approach in the future, complementing agricultural policy. A close interdisciplinary cooperation between medicine, nutritional science, technology and politics is necessary to establish personalised nutrition in a practically oriented manner. To achieve this, digital technologies are crucial: they enable the continuous acquisition and analysis of individual data, create motivation via realtime feedback and support sustainable changes in behaviour. Research and teaching, for example through new degree programs and research projects on personalised nutrition, are promoting rapid implementation. In the future, personalised nutrition will be more gender-sensitive, digitally supported, and more integrated into prevention, therapy, and performance optimisation, thus making a significant contribution to health promotion. In short: personalised nutrition combines scientific findings and digital technologies to promote health through individually tailored recommendations.

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