

Research in Sports Medicine – New Perspectives and Opportunities

Forschung in der Sportmedizin – Neue Perspektiven und Chancen

Sports medicine as an independent medical specialty discipline requires strong academic representation to give it impulse and direction. The development of academic sports medicine in Germany is, however, characterized by the struggle to keep professors at the university. Various causes may be responsible for this. In addition to a shortage of specialists, which makes the clinical positioning of the discipline difficult, scientific accomplishments, which play an essential role in the security of university professors, are a critical factor.

The question thus arises of where sports medicine stands in comparison with other medical specialty disciplines and what scientific perspectives exist. The comparison with other medical specialties is rather sobering. Measured by the number and impact of publications, sports medicine cannot reach the level of many medical specialties, especially the most wide-spread specialties. There are only few academic locations which have scientific productivity and presence oriented to international standards.

On the one hand, there are certainly a number of structural reasons, such as too-little support for specialty-specific research, sometimes lack of integration in the medical faculties and their scientific core resources and research leagues, and difficulty in recruiting young newcomers because of a lack of clinical perspectives, just to name a few. On the other hand, the scientific support landscape has changed and enables integration in national and international research leagues, even with limited direct site-dependent integration, making it possible to compensate the underlying structural deficits at least in part. Thematically, it can be said that sports medicine, as a cross-sectional discipline, cannot reach the scientific profundity attained by other medical specialties.

These hindrances to appropriate scientific performance capacity are opposed by a number of possibilities and chances, which – properly applied – enable a competitive stand compared to other scientifically-successful medical specialties. There are chances and perspectives in both thematics and methods which can enable sports medicine to maintain and expand its scientific basis for the future, as long as they are consistently applied.

New Thematic and Methodical Research Areas as Perspective and Chance

The basis for the growing changes and perspectives for academic sport medicine is on the one hand the breadth of the specialty, which can only be conceived in such a cross-sectional branch, and the system(patho-)physiological and system(patho-)biological approach, which is immanent in this branch. On the other hand is the dynamic approach, which is reflected in the exercise-oriented observation of physiological and biological parameters.

Chances thus arise from increasing understanding of the importance of sports and exercise therapy in many diseases. While cardiovascular and metabolic diseases were in the focus of sports medicine in the past, sports medicine now covers practically all diseases in which a possible exercise and sports-therapeutic approach can be applied or scientifically investigated. The focus is not limited to cardiovascular, metabolic or orthopedic diseases, but includes for example oncological, neurological, immunological and endocrinological diseases. The various system effects of the different exercise and sports therapies, which differ in type and exercise load, make it necessary that these therapies be scientifically sports-medically developed and evaluated, originating in academic sports medicine.

This area makes it necessary that exercise and sports therapies be developed and applied in close cooperation with other medical departments under the direction of Sports Medicine. This is the only way to make full evidence-based and personalized use of the potential inherent in exercise and sports therapies, since knowledge of the control of load and regeneration, for which Sports Medicine stands, must be adapted to the underlying pathophysiological conditions, especially in the therapeutic area.

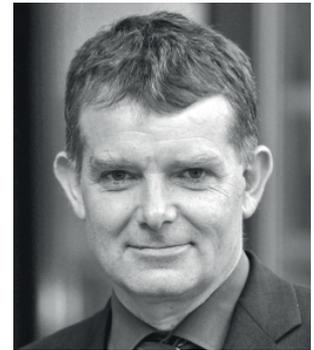
Another great chance arises through non-invasive and minimally-invasive methods of analysis, which make it possible to practically record time and exercise-elicited physiological and biological parameters like glucose, oxygen, lactate and various enzymes online, and Omics procedures, which enable generation of complex knowledge of genomes, epigenomes, proteomes, phosphoproteomes, metabolomes and microbiomes. Scientific approaches which should be originally addressed in Sports Medicine are obvious. New diagnostic tools increasingly make it possible to perform isolated examinations, but also to record changes taking into consideration the type, scope and intensity of physical activity. >

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Use and Development of Competence and Expertise

Sports Medicine with its system(patho-)physiological expertise offers the necessary scientific basis for the use of the results which can be generated by these procedures. In order to efficiently use the results, they must be considered in the context of classical system-physiological studies. This can make use and expand the core competencies of Sports Medicine. However, coordinated efforts by academic sports medicine are needed which go beyond individual sites, making use of all available national and international support possibilities.

Strong cooperation with other medical departments is important, in which Sports Medicine is an independent and strong research partner and which takes on the leading role in the area of exercise and regeneration in various diseases. Academic Sports Medicine must engage with new diagnostic possibilities and attempt to achieve the leading role in the evaluation and application of such procedures in the context of physical activity. Improved use of knowledge in Omics analyses, taking system(patho-)physiological parameters into consideration make it necessary that basic molecular and cellular knowledge be included to a greater extent in Sports Medicine. This requires scientific training of young sports doctors, which includes the basic knowledge and knowledge of the use of new diagnostic procedures.

Academic Sports Medicine should strive for multidisciplinary research teams, like those common in other medical specialties, which make it possible to achieve the transfer of basic knowledge to practical medicine. The training program of the DGSP, initiated by the Scientific Council of the DGSP, is one step toward support of the next generation of sports specialists, doctors and non-doctors, to promote sports-medical research and to strengthen academic Sports Medicine.

Academic Sports Medicine to Maintain the Specialty

But will practical and clinical sports medicine profit from the scientific achievements of academic Sports Medicine in the various application areas, with prevention, therapies and diagnostics, leisure sports and elite sports? This question can be answered with “yes”. Practical clinical sports medicine needs the scientific knowledge to make practical and clinical use of the new diagnostic possibilities cited and to control exercise and sports-therapeutic programs offered in different diseases. A scientific strength of academic Sports Medicine is the guarantee that Sports Medicine will be maintained and further developed as an independent medical specialty. ■

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