Editorial

REHABILITATION RESEARCH AFTER YEAR 2000 – A REVIEW FROM A PANEL DISCUSSION

This is the second issue of *Journal of Rehabilitation Medicine*, the successor of Scandinavian Journal of Rehabilitation Medicine with its more than 30 years of history in medical publishing. In the Editorial of the first issue of 2001, we explained the reasons behind the transition from the one journal into the other. Again, we welcome you as readers of *Journal of Rehabilitation Medicine* and also encourage you to submit manuscripts within the various areas of physical and rehabilitation medicine.

The journal sponsored a postgraduate symposium held in Uppsala, Sweden, on October 6, 2000 on recent developments in rehabilitation medicine with lectures by Scandinavian researchers as well as by two especially invited European researchers, Gustaaf Lankhorst, Amsterdam, The Netherlands (Outcome measurements and quality assurance) and Derick Wade, Oxford, England (Recent aspects on stroke rehabilitation). The problems of the current priorities of rehabilitation in the welfare state Sweden were reviewed by Olle Höök, Uppsala indicating the discrepancies between principles and resources, and the rising problem of adequate rehabilitation for the increasing elderly population, the need for better co-ordination and deeper knowledge among the professionals engaged in rehabilitation, and more resources for evidence-based rehabilitation research.

The panel discussion on "Rehabilitation research after year 2000", which will be briefly reviewed in this Editorial, started by the moderator Katharina Stibrant Sunnerhagen, Göteborg, who stated the aim of rehabilitation as building bridges between health care and society to provide individual quality of life. Active Scandinavian researchers in rehabilitation medicine participated in the panel discussion.

An important basis for the development and practice of rehabilitation research is the rapidly increasing knowledge within neurobiology where, as pointed out by Bengt Sjölund, Lund/Umeå, rehabilitation especially deals with the long-term processes and adaptability. Aspects on sensory dysfunction, brain plasticity, regeneration capability, cell transplantation, interaction between the neuroendocrine function and the brain, and training-related changes were highlighted. New tools as MR, transcranial magnetic stimulation, brain injury markers should be used within rehabilitation research. The increasing knowledge of how to activate the brain during rehabilitation, e.g. how to increase the cerebral blood flow by sensory stimulation, was pointed out by Thomas Lundeberg, Stockholm. The importance of getting more knowledge of how to increase cognitive function and the importance of learning how to activate the non-stress system in rehabilitation was mentioned. Among questions raised were: To what extent does functional imaging data correspond to outcome? What role will neuronal progenitor cells play in future rehabilitation – stimulated *in situ* or as neural replacement? What will the blocking neural growth inhibitory factors lead to? Close interaction between basic and applied research will hopefully enable the design of rehabilitation strategies based on current neurobiological principles.

The participants also stressed that the increased knowledge we have about pain sensitisation must be taken into account in pain rehabilitation research and management. Not only biomedical research but also better knowledge within behavioural science are of importance. Research on the nature of various behaviours and the need for more knowledge on abnormal illness behaviour was advocated by Bengt Sjölund. Which factors are of importance for a change in pain behaviour? The need to make more use of scientifically well documented strategies for clinical practice was stressed.

New treatment strategies were discussed, among them the interaction between neuropharmacology and brain injury rehabilitation (Jan Lexell, Lund) and the use of functional electrical stimulation, especially for patients with spinal cord injury (Fin Biering-Sørensen, Copenhagen). There is an increasing interest in the potential positive and negative roles of pharmaceuticals in the recovery of traumatic brain injury survivors. We thus have more and more clinical experience but, unfortunately, only few scientific studies. Evidence suggests that medication can further recovery, reduce post-traumatic agitation, improve mood and behaviour, improve sleep and speech and enhance cognition. The need for progress beyond the anecdotal stage of research was stressed.

In patients with traumatic spinal cord injury there is a number of on-going experimental research projects on regeneration of the nervous tissue in the injured spinal cord, and these will hopefully be taken over to clinical research with a rehabilitation approach. As reviewed by Fin Biering-Sørensen, in clinical studies the use of anti-apoptic drugs, free-radical scavengers, and anti-inflammatory agents are being tested. Positive and relevant effects of functional electrical stimulation have been demonstrated in these patients, with altered muscle structure and metabolism, and effects on the central circulatory capacity. Other important research areas for these patients are the management of respiratory limitation, improvement of walking ability, including the use of body weight support training to enhance the spinal walking generator, management of spasticity, pain management, treatment of urinary and bowel function,

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and prevention of osteoporosis and fractures. These patients have, for instance, a 23 times increased risk of fracture of the femur.

Patients with musculoskeletal diagnoses are by far the largest group of those who get a disability pension and, thus, these patients are of particular interest in a rehabilitation context. In her contribution on occupational rehabilitation in musculoskeletal disorders, Eira Viikari-Juntura, Helsinki discussed new avenues in the research on musculoskeletal disorders and pointed out that both symptom-based and objective outcome assessment methods should be improved. A variety of methods exists to assess exposure for short-term outcomes, whereas exposure strategies for outcome with long induction times need to be developed. The pathomechanisms of the effect of low-level static contractions and adverse psychosocial conditions need clarification. Genetic epidemiology is an emerging field of research and Eira Viikari-Juntura found it particularly interesting to study the interaction between genetically determined susceptibility and occupational risk factors.

In a review of the research activities at Sunnaas Rehabilitation Hospital in Oslo, Johan Stanghelle described the organisation and the multidisciplinary approach in rehabilitation research there. Research is performed on different patient groups, such as stroke, traumatic brain injury, postpolio. Hannu Alararanta, Helsinki, in a special communication, emphasised the need for ergonomic interventions in persons working despite severe physical disabilities. In studies and management of work disability and work handicap, subjective as well as objective disabilities should be recognised, as pointed out by Gisli Einarsson, Reykjavik.

Among general comments about future research and development in rehabilitation medicine, Björn Gerdle, Linköping, pointed out that medical students must learn and practise clinical rehabilitation to be recruited to rehabilitation research. There is a need to increase interdisciplinary teamwork in research as in clinical practice and also a need for multicentre collaboration. Among other research projects given priority in the discussion can be mentioned: better understanding of the situation of the family of the patient, studies involving the community, long-term follow-up studies after acute rehabilitation, including long-term changes of the action of the neurobiological changes, better understanding of what it means to grow old with a disability, and studies on how to modify the environment. The statistical data analysis may have to be approached somewhat differently from the way it is done in conventional biomedical research. In rehabilitation, the results may be "short and fat" instead of "long and lean", requiring multivariate analysis, projection methods and also proper statistical analysis of the ordinal scale data often collected.

It is our hope that the panel discussion will help stimulate future research in rehabilitation, so strongly needed, and thus improve the clinical management and increase the academic status of our discipline.

Göteborg and Stockholm in December 2000

Gunnar Grimby	*Jan Ekholm*
Editor-in-Chief	Associate Editor

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