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## THE WAY FORWARD FOR HYDROTHERAPY

HYDROTHERAPY is defined as 'a pool therapy programme specifically designed for an individual to improve neuromuscular skeletal-function conducted and supervised by appropriately qualified personnel, ideally in a purpose built hydrotherapy pool'. The use of hydrotherapy was first employed by Hippocrates (c. 450–375 B.C.) and is now commonly undertaken by physiotherapists world-wide including both the National Health Service and the private sector in the United Kingdom. Since the 1930s physiotherapists have employed neuromuscular theory and continually improved their techniques of pool exercise therapy with the 'Bad Ragaz', 'Halliwick' and 'stretching' methods. The Bad Ragaz ring method was developed at Bad Ragaz in Switzerland from the mid-1950s. It incorporates techniques of increasing progressive resistance whilst adopting the principles of propriocep-

tive neuromuscular facilitation [1]. The Halliwick Method was devised by James McMillan, M.B.E., in 1949 and is based on principles of hydrodynamics and body mechanics [2]. Whilst constantly refining their hydrotherapy techniques physiotherapists have done little to attempt to evaluate their work.

Green and his colleagues [3] provide good evidence to show that specific and properly graded exercises benefit patients with OA of the hip. Additional twice weekly hydrotherapy sessions for 6 weeks in one group of patients showed no additional benefit in any outcome indicator. The title of their paper is slightly misleading in suggesting home exercises are as effective as outpatient hydrotherapy for OA of the hip for the study design was not comparative. A greater number of patients would be required to establish any trend in further improvement from hydrotherapy on a patient

population already improving with exercise. However, their results do question the therapeutic advantage of an additional 6-week course of hydrotherapy. Although by itself the study does not show hydrotherapy is ineffective, it shows the need to re-examine the costs and benefits of hydrotherapy. It is a very expensive therapeutic tool and as the National Health Service becomes more cost conscious, physiotherapists, and referring clinicians must surely be asked to account for such a commodity. So how effective is hydrotherapy?

A 10-year *Med-line* search showed no randomized prospective trials of hydrotherapy. There have been several uncontrolled prospective studies. Danneskiold-Samsøe *et al.* [4] found that after 2 months of hydrotherapy for patients with RA the median maximal isometric and isokinetic muscle strength of the quadriceps muscle increased significantly ( $P < 0.02$  and  $P < 0.05$ ). However, there was no control group and only eight patients were studied. Dial *et al.* [5] also evaluated rheumatoid patients using a multiple case study design with sufficient base line data to establish any trend from hydrotherapy intervention. They found significant improvement by the end of the programme which remained 4 weeks post programme. Again this was a small study of 12 patients and no control group. A third report [6] suggested significant benefits ( $P < 0.001$ ) in patients with low back pain in a group hydrotherapy back exercise session. However this work was not designed as a trial to investigate the therapeutic efficacy of hydrotherapy and no control measures were available. Smit and Harrison [7] later expanded this work showing similar results with a significant reduction in pain ( $P < 0.05$ ) on 20 patients with low back pain after a 4-week hydrotherapy programme. Once again this study was designed as a pilot investigation and did not have a control group. Thus the literature endorsing the use of hydrotherapy as a therapeutic tool is poor. There is little scientific evidence to support the use of water-related rehabilitation programmes for individuals with arthritis [4]. Green *et al.* [3] suggest physiotherapists, doctors and patients have a high regard for hydrotherapy and that as 'clinicians will be increasingly required to demonstrate the value of treatment, it is urgent that studies are undertaken and funds made available to allow them to do this'. What should be done to improve the situation?

Outside the use of hydrotherapy there are grounds for employing exercise therapy and physical therapy in OA. Bunning and Materson [8] reviewed the above for OA. They provided evidence from human and animal studies to demonstrate the efficacy of conditioning and strengthening in the treatment of OA. Despite this positive paper a recent working group noted the lack of evidence concerning the efficacy of physiotherapy for patients with OA [9]. The situation is better with RA which enjoys studies supporting both rest and exercise [10]. Indeed, a recent study by Brighton *et al.* [11] showed significant improvements could be achieved over 48 months from a long-term hand exercise programme for the rheumatoid hand.

Jane Riddoch [12] states that 'one reason for the paucity of group studies in rehabilitation research may be that until quite recently evaluation of therapy was not seen to be part of, or relevant to, the job description of the practising clinician, but rather to fall within the specialist sphere of the research physiotherapist'. Whilst the group study undoubtedly provides the practising clinician with valuable knowledge, and is more advanced than the single case study, it is debatable as to whether we are yet at that stage with hydrotherapy. Research methodology needs to be devised. Parry [13] argues that 'physiotherapists need to examine their treatments and practice in relation to the reality of the people they treat', indeed, therapy consists firstly of the selection of an appropriate treatment for a particular condition, and, secondly, of the evaluation of the treatment once it has been implemented. Given the immense diversities of patients and their various pathologies who enjoy the luxury of hydrotherapy we still have a long way to go in terms of identifying those patient groups who benefit the most from intervention.

What implications arise from clinical research failing to illustrate the advantages of hydrotherapy? This question can be extended to encompass the paucity of research information which shows physiotherapy is beneficial. It is easier to define what should not be done. There is no need to radically alter current clinical practice in physiotherapy, nor should hydrotherapy be abandoned. Instead physiotherapists and rheumatologists should work together to define those components of clinical practice which are valuable and effective. This will require a combined approach incorporating clinical audit, evaluating the outcomes of physical treatments (using methods such as the single case study), and developing more research methodologies in physiotherapy. A cultural shift is underway in physiotherapy with the profession embracing a greater research focus; this is well developed in many centres and must be encouraged and supported.

For too many years medical research has ignored important questions of clinical practice in favour of laboratory science. There was a feeling that clinical research was an area for the less academically able. Such views are now undergoing a gradual metamorphosis. The prestige of clinical research is no longer so far behind that of its laboratory counterpart. But developing expertise in clinical research is a slow process, and this is especially the case in the intensely practical area of physiotherapy. When patients see a physiotherapist they are given time to talk about their specific problem, practical advice on how to use their musculoskeletal system and physical therapy which is specifically designed for them as individuals. Dissecting out the relative contributions of each of these components is difficult. Although there is no comparative information it may be a magnitude of difficulty greater than testing the effectiveness of an anti-rheumatic drug. Against this background it is likely that many research studies will fail to find a difference in favour of physiotherapy principally due to type II errors. Until there is more research into methods to assess the

impact of physiotherapy on patients with arthritis great care must be taken in interpreting negative studies. It is by addressing these issues that the physical treatment of patients with arthritis can continue to develop and improve.

It is fashionable to suggest that bodies funding research have a predisposition against supporting clinical research. Such a view is unhelpful and probably incorrect. A clear agenda for clinical physiotherapy research is required, and guidance from eminent physiotherapy researchers is emerging [12–14]. This is to be encouraged. We believe physiotherapy has enormous potential for helping patients with arthritis. There is a need to define which patients should be treated, the types of therapy which are most beneficial, and the best methods of defining outcome. Hydrotherapy is an expensive component of rehabilitation. If a small percentage of the rehabilitation budget was to be spent on research and development there would be an enormous opportunity for advance.

Rheumatologists may be tempted to suggest that the study by Green *et al.* [3] shows hydrotherapy to be ineffective and therefore not worthy of their support. This would be wholly inappropriate. There is equally no evidence we have uncovered from prospective studies that seeing a consultant rheumatologist improves OA; we doubt the lack of this information will lead to suggestions that rheumatologists are not needed. Instead we suggest that there is a strong case to support a more active programme of research into physiotherapy, its many components and clinical applications.

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### ANNOUNCEMENTS AND CALENDAR FOR 1993

September	18–19	Paediatric Rheumatology Course. BIRMINGHAM (Dr T. R. Southwood).
September	22–23	EMG Course. CAMBRIDGE (Dr I. M. Morris).
September	23	Update 'Genetic Diseases of Connective Tissue'. CAMBRIDGE (Dr J. Jenner)
September	23–24	Heberden Round. CAMBRIDGE (Dr B. Hazleman).
October	14–15	Core Course. LIVERPOOL (Dr R. N. Thompson)
October/		
November	31–5	SR Travelling Fellowship. LEEDS (Prof. V. Wright).

Further information about these events from Ms. Anne Mansfield, British Society for Rheumatology, 3 St Andrew's Place, Regent's Park, London NW1 4LE.