

Editorial

A step forward for exercise in the management of osteoarthritis

The report in this issue of the MOVE consensus group [1] on the role of exercise in the management of osteoarthritis of the hip or knee is a refreshing contribution to ongoing discussions. This article clearly differentiates research evidence from expert opinion regarding the role of exercise in osteoarthritis of the lower limbs and shows the large gaps between evidence and opinion. In a certain way, this illustrates the restrictions of evidence-based medicine. There is no doubt that daily clinical practice has gained enormously from the introduction of evidence-based medicine; however, sometimes evidence-based medicine has become a holy grail, and treatment not based on evidence (i.e. knowledge derived from rigorously controlled research) has become suspicious. In the coming years we will need to find a way to profit from evidence-based medicine as well as from eminence-based opinion. In the field of osteoarthritis, research evidence for joint arthroplasties is a good example of this.

The multidisciplinary guideline development group has formulated, based on expert opinion and using the Delphi process, 10 propositions that describe key clinical points regarding exercise therapy for osteoarthritis of the knee or hip. When, after three rounds, consensus was reached on these propositions, evidence was sought in the literature to confirm or refute these propositions. Not completely unexpectedly, only the lowest category of evidence was found for the majority of these propositions: evidence from expert committee reports/opinions and/or clinical opinion of respected authorities. Therefore, most of the recommendations based on these propositions also had the lowest strength of recommendation. What does this mean? Do we in daily practice prescribe exercise therapy in patients with osteoarthritis of the lower limbs without knowing what kind of exercise is needed? Are we not able to define what kinds of specific exercises are effective for a specific patient? Are we unable to tell our patients how often and for what period of time they need to exercise?

Of course, systematic reviews and meta-analyses [2–4] consistently provide evidence for small to moderate symptomatic efficacy (effect size versus placebo 0.57–1.00) of land-based therapeutic exercise in people with osteoarthritis of the knee and probably to a smaller degree in people with osteoarthritis of the hip. However, the paucity of clinical trials in this area of research, as well as the substantial heterogeneity in terms of participants recruited and interventions studied, precludes any specific recommendation regarding optimal treatment content, dosage or treatment delivery mode. The MOVE report reveals clear gaps in our knowledge in three fields. Which kind of exercise is effective (propositions 1, 3 and 5)? In which patients is exercise therapy most effective (propositions 2, 4 and 9)? How can exercise therapy best be delivered and implemented (proposition 6, 7, 8)? These gaps clearly form the research agenda for the future, but before we embark on new research we should first reflect on why only limited information is available, what information might be available from other fields of research, and whether we are able to translate the most relevant questions into research.

Exercise can be divided into joint-specific exercises for strength and range of motion and general aerobic conditioning, and can be either directly supervised on land or in water, or offered as a

home-based self-directed programme. Exercises can differ in frequency, intensity and programme duration. In addition, the patient who is treated is male or female, is old or middle-aged, may be overweight, may have comorbidity, and may be used to an active lifestyle or to a sedentary job. Thus, both the exercises and the patients who are treated with exercise show a wide variety of characteristics. This diverse spectrum of exercises and patients makes it difficult to answer basic questions on efficacy. For instance, when comparing the effect of aerobic exercises with joint-specific strength exercises it will make a huge difference whether patients that are randomized to aerobic exercises have a very active lifestyle or have a sedentary life. The same holds for patients randomized to joint-specific strength exercises: the impact of this treatment on a patient who has always worked at a construction site is different from the impact on a patient who has sat at his working desk in the city hall for 30 years. These obvious observations illustrate the difficulties in interpreting study results. Furthermore, this diverse spectrum of exercises and patients raises questions on the design of studies. To what extent should exercise be standardized? Which patients should be selected for the study? Standardization of exercise and selection of a clearly defined group of patients will facilitate the interpretation of results, but it limits the generalizability of the conclusions and clinical application of the results. Nevertheless, we seem to have reached a stage at which research on clearly defined exercise in clearly defined groups of patients seems to be called for: exercise in patients with osteoarthritis of the knee and hip seems to be effective in general terms; now the time has come for more focused research on specific forms of exercise in clearly defined groups of patients.

In order to evaluate which patients may gain the most profit from exercise therapy, many investigators have performed subgroup analyses or multiple regression analyses to identify predictive factors. None has come out satisfactorily. However, it could very well be that we are not yet looking at the right risk factors. We should perhaps learn from literature on factors that play a role in the natural history of osteoarthritis, such as biomechanical factors. In a recent review, the roles of proprioceptive deficits, ligament laxity and malalignment were described elegantly in the development and progression of knee osteoarthritis [5]. Also, the mediating role of muscle strength in avoidance of activity and disability in patients with osteoarthritis of the knee has been emphasized [6]. These kind of studies might help us to identify the factors that need to be taken into account when we are designing studies. For example, patients with a proprioceptive deficit could require a totally different approach towards exercise than patients with a general tendency to avoid activity. From studies on factors that affect development and progression of osteoarthritis, we can learn how to design more focused studies on exercise in osteoarthritis.

Another important point is how exercise therapy is delivered and how patients can be stimulated to adhere to this exercise therapy. Adherence to exercise therapy is of utmost importance for long-term benefit. When exercises are not integrated into the daily activities of a person it will be very difficult to sustain these exercises for a prolonged period. Therefore, we should learn from the psychological literature and the literature on treatment of

chronic patients how adherence can be improved, and we should also try to incorporate measurement of this adherence in our research protocols. Improvement in this field can only come from multidisciplinary research.

Several more specific comments on the MOVE consensus could be made. (i) The literature contains other attempts to formulate guidelines on exercise therapy in osteoarthritis [7, 8]. In certain respects, those guidelines provide more detailed recommendations on exercise in osteoarthritis than the MOVE consensus does. For example, some provide recommendations on how to minimize biomechanical stress during exercise and on how to evaluate the appropriateness of community-based exercise settings [8]. One could speculate that the Delphi procedure used in the MOVE consensus has wiped out this kind of detailed recommendation. Although scientific evidence is most likely lacking, these more specific recommendations are certainly based on extensive clinical experience and should be considered when prescribing exercise in osteoarthritis. (ii) In the MOVE consensus, propositions were formulated and then evidence was sought in the literature to confirm or refute these propositions. Not all relevant literature seems to have been found, however. For example, in a recent systematic review it was concluded that both high- and low-intensity aerobic exercise is effective in osteoarthritis of the knee [9, based on 10]. This conclusion is highly relevant for the evaluation of the MOVE propositions. (iii) The MOVE consensus concludes that there are few contraindications to the prescription of exercise in osteoarthritis of the knee or hip. Although cited elsewhere in the consensus report, the recent evidence on the relationship between quadriceps strength and the progression of osteoarthritis in malaligned and lax knees could have been cited here [11]. This preliminary finding could make us aware of the possibility that more detailed (biomechanical) analysis of osteoarthritic joints could result in contraindications for (certain kinds of) exercise.

In conclusion, it will be a challenge for researchers in the field of osteoarthritis to design further studies that might help us to find answers to the questions elicited by the MOVE consensus report. We have argued that research on specific forms of exercise in clearly defined groups of patients, based on biomechanical or behavioural knowledge about disability in osteoarthritis, could result in answers to these questions. It will be some time before these questions are answered. Before we have the answers, we should at least join the public health strategy to reduce the burden of musculoskeletal conditions, as recently formulated by the European Bone and Joint Health Strategy project [12]. This strategy stimulates a more active lifestyle for the elderly and will certainly reduce the impact of osteoarthritis on the individual and on society, and will also have other beneficial effects on health. Furthermore, in our clinical work—more specifically, in prescribing exercise to patients with osteoarthritis of the knee and hip—we should learn to integrate knowledge derived from rigorously controlled studies with expert opinion. The MOVE consensus report provides a good example of how to do this.

The authors have declared no conflicts of interest.

J. W. J. BIJLSMA and J. DEKKER¹

Department of Rheumatology and Clinical Immunology, University Medical Center, P.O. Box 85500, 3508 GA Utrecht and ¹Department of Rehabilitation Medicine, Institute for Research in Extramural Medicine, VU University Medical Center, P.O. Box 7057, 1007 MB Amsterdam, The Netherlands

Correspondence to: J. W. J. Bijlsma. E-mail: j.w.j.bijlsma@azu.nl

References

1. Roddy E, Zhang W, Doherty M *et al*. Evidence-based recommendations for the role of exercise in the management of osteoarthritis of the hip or knee—the MOVE consensus. *Rheumatology Advance Access* published September 7, 2004, 10.1093/rheumatology/keh399.
2. van Baar ME, Assendelft WJ, Dekker J, Oostendorp RA, Bijlsma JW. Effectiveness of exercise therapy in patients with osteoarthritis of the hip or knee. *Arthritis Rheum* 1999;42:1361–9.
3. Fransen M, McConnell S, Bell M. Therapeutic exercise for people with osteoarthritis of the hip or knee. A systematic review. *J Rheumatol* 2002;29:1737–45.
4. Pham T, Fransen M, Ravaud P, Dougados M. Osteoarthritis. In: Tugwell P, Shea B, Boers M *et al.*, eds. *Evidence based rheumatology*. London: BMJ Books, 2004:141–82.
5. Sharma L. The role of proprioceptive deficits, ligamentous laxity, and malalignment in development and progression of knee osteoarthritis. *J Rheumatol* 2004;31(Suppl. 70):87–92.
6. Steultjens MP, Dekker J, Bijlsma JW. Avoidance of activity and disability in patients with osteoarthritis of the knee. The mediating role of muscle strength. *Arthritis Rheum* 2002;46:1784–8.
7. Minor MA. Exercise for the patient with osteoarthritis. In: Brandt KD, Doherty M, Lohmander LS, eds. *Osteoarthritis*, 2nd edn. Oxford: Oxford University Press, 2003:299–305.
8. Minor MA, Westby MD. Rest and exercise. In: Robbins L, Burckhardt CS, Hanan MT, DeHoratius RJ, eds. *Clinical care in the rheumatic diseases*, 2nd edn. Atlanta: Association of Rheumatology Health Professionals, 2001:179–84.
9. Brosseau L, MacLeay L, Robinson V, Wells G, Tugwell P. Intensity of exercise for the treatment of osteoarthritis (Cochrane Review). In: *The Cochrane Library*, Issue 1. Chichester: John Wiley & Sons, 2004.
10. Mangione KK, McCully K, Gloviak A, Lefebvre I, Hoffmann M, Craik R. The effects of high intensity and low intensity cycle ergometry in older adults with knee osteoarthritis. *J Gerontol* 1999;54:M184–90.
11. Sharma L, Dunlop DD, Cahue S, Song J, Hayes KW. Quadriceps strength and osteoarthritis progression in maligned and lax knees. *Ann Intern Med* 2003;138:613–9.
12. Report: European action towards better musculoskeletal health. Report for the Bone and Joint Decade, Brussels, 2004.