Chapter 11
Summary and discussion
Summary

Rheumatoid arthritis (RA) is a complex chronic disease, which, despite the advanced pharmacological treatment, requires care provided by health professionals other than the rheumatologist in many patients during the course of their disease. Physical therapy is an important part of the non-pharmacological treatment of patients with RA. However, due to the changes in the medical treatment of patients with RA the role of physical therapists and patient has changed as well.

The aims of the present thesis were to describe the currently available RA guideline including recommendations concerning the physical therapy management, to develop a RA guideline specific for physical therapists, and make an inventory of the currently provided physical therapy management in patients with RA. Moreover, this thesis includes a synthesis of the evidence regarding the effectiveness and safety of supervised and home-based exercise programs in patients with RA and the maintenance of physical activity after two one-year internet-based physical activity interventions in RA patients. In addition, the role of motivation and health care providers’ practice regarding the level of physical activity of patients with RA was evaluated.

Chapter 1 provides an introduction to the physical therapy management in patients with RA in which evidence based practice is more and more promoted. It seems that implementing evidence into daily practice is a difficult process and therefore various guidelines have been developed. However, the quality of these guidelines has been questioned.

Chapter 1 furthermore describes that physical activity has multiple health benefits in patients with RA. However, there is a lack of good quality evidence with regard to effectiveness and safety of various physical activity and physical exercise programs, whether this effect is maintained after follow-up, to what extent physical activity is promoted by health professionals and which patients’ characteristics may play a role in why patients with RA become physically active or not.
After the general introduction in the first chapter, this thesis is divided into two parts:

- Part 1 describes the currently provided physical therapy management in patients with RA and various guidelines including recommendations concerning physical therapy interventions.
- Part 2 focuses on the short-term and long-term effectiveness and safety of various physical activity and physical exercise programs directly after the program and after follow-up, to what extent physical activity is promoted by health professionals and which patients’ characteristics are associated with the level of physical activity.

**Part 1: Physical therapy in rheumatoid arthritis: Current practice and guidelines**

*Chapter 2* describes a systematic literature search for clinical practice RA guidelines that included physiotherapy interventions. The quality of the selected guidelines was assessed by means of the Appraisal of Guidelines for Research and Evaluation (AGREE) instrument. In addition, the recommendations of guidelines with the highest quality scores were summarized. The literature search yielded eight clinical practice guidelines that fulfilled the inclusion criteria. Six of these eight clinical practice were recommended or strongly recommended according to the AGREE instrument. In general, guideline recommendations on physiotherapy intervention, from the recommended guidelines as well as from the not recommended guidelines, lacked detail concerning mode of delivery, intensity, frequency, and duration.

In *Chapter 3* the development of a Dutch physical therapy RA practice guideline, based on current scientific evidence and best practice, is described. A guideline steering committee, comprising 10 expert physical therapists, selected topics concerning the guideline chapters initial assessment, treatment and evaluation. For the initial assessment, three recommendations were made. Based on the ICF core sets for RA a list of health problems relevant for the physical therapists was made and completed with red flags and points of attention. Concerning treatment, three recommendations were formulated; both exercise therapy and education on physical activity were recommended, whereas passive
interventions (delivery of heat or cold, mechanical, electric and electromagnetic energy, massage, passive mobilization/manipulation and balneotherapy) were neither recommended nor discouraged. For treatment evaluation the Health Assessment Questionnaire and the handheld dynamometer, 6-minute walk test or Åstrand bicycle test including Borg-scale for rating the perceived exertion, Escola Paulista de Medicina Range of Motion Scale and a Visual Analog Scale for pain and morning stiffness were recommended.

Chapter 4 provides insight into current physical therapy practice among patients with RA. Data of general and expert physical therapists (physical therapists with additional arthritis training) were collected by means of a questionnaire including a defined set of assessments and interventions that were included in the Dutch physical therapy RA guideline. The majority of all physical therapists reported to always apply most of the assessments and interventions that were recommended in the Dutch physical therapy guideline. The observed differences between experts and general physical therapists support the added value of advanced arthritis courses.

The cross-sectional study in Chapter 5 explored the relationships among the roles assumed by physical therapists in arthritis care and their previous participation in arthritis courses for continuing professional development (CPD) by means of a questionnaire. The most common roles reported by participants were providing traditional physical therapy interventions and providing postsurgical care. Arthritis-related CPD courses significantly increased the expected number of roles assumed by physical therapists in OA and RA management. Further research is needed to understand the effects of CPD on other areas of physical therapist practice and patients’ outcomes.

Part 2: Exercise therapy and physical activity in patients with RA

Chapter 6 describes the results of an updated Cochrane review with regard to the effectiveness and safety of short-term (< three months) and long-term (> three months) supervised dynamic exercise therapy programs (aerobic capacity and/or muscle strength training), either land or water-based, for patients with RA. The eight included studies in this updated review suggest that short-term, land-based
aerobic capacity training has a positive effect on aerobic capacity, in combination
muscle strength training a positive effect on muscle strength as well. Moreover,
that short-term, water-based aerobic capacity training has a positive effect on
functional ability and aerobic capacity. Concerning long-term exercise programs,
the results show that long-term, land-based aerobic capacity and muscle strength
training has a positive effect on aerobic capacity and muscle strength. With respect
to safety, no deleterious effects were found with regard to disease activity, self-
reported pain and radiological damage. Based on the evidence, aerobic capacity
training combined with muscle strength training was recommended as routine
practice in patients with RA.

Chapter 7 described the results of another Cochrane review concerning the
effectiveness and safety of home-based exercise programs in patients with RA.
The eleven selected RCTs showed that home-based exercise programs (including
aerobic capacity and/or muscle strength exercises) have in general a positive effect
on functional ability and muscle strength compared to no intervention. There were
no differences in effectiveness of home-based exercise programs (including aerobic
capacity and/or muscle strength exercises) as compared to similar supervised
exercise programs with regard to functional ability. However, home-based exercise
programs were less effective than supervised exercise programs with regard to
aerobic capacity and muscle strength. Home-based exercise programs that were
goal directed and/or included stretching as well as strengthening exercises were
found to be more effective compared to pain directed program and programs
including only stretching exercises. In the studies measuring disease activity, self-
reported pain and radiological damage, no deleterious effects were found. Based
on the evidence, supervised exercise programs comprising aerobic and muscle
strengthening exercises were recommended. However, after an initial period of
supervision, home based programs should be considered.

Chapter 8 described a 1-year follow-up study concerning a randomized
comparison of an Internet-based individualized (IT) and a general (GT) training
programme in sedentary RA patients. The results show that in RA patients the
effectiveness on physical activity of both an individualized an a general one-year
Internet-based physical activity programme is sustained up to 12 months after the
interventions. There were no significant differences between the IT and the GT-groups. And apart from a significantly higher Rheumatoid Arthritis Quality of Life (RAQoL) score in the IT-group at follow-up compared to baseline, there were no significant differences within or between the programmes regarding functional ability or quality of life.

In Chapter 9 the association between physical activity and (1) the extent to which RA patients believe that physical activity is a goal set by themselves (autonomous regulation) or by others (coerced regulation) and (2) the extent to which RA patients feel supported by rheumatologists in the provided care (autonomous supportiveness) was examined. The results show that more autonomous regulation was significantly associated with a higher physical activity. However, autonomous supportiveness was not associated with the level of physical activity. The finding that the regulation style of the patients is a significant determinant of physical activity might contribute to a further development of interventions to enhance physical activity in RA patients.

The cross-sectional study described in Chapter 10 examined to what extent physical activity is currently promoted by Dutch rheumatologists, rheumatology clinical nurse specialists and expert physical therapists in patients with RA and to what extent the public health recommendation for physical activity (physical activity at a moderate intensity level for about 30 minutes during at least 5 days) is used in this respect. Physical activity was considered as an important health goal for RA patients by rheumatologists, nurses and physical therapists. The majority of these health care providers considered physical activity according to the public health recommendation attainable and safe for RA patients, however not for patients with a high disease activity. Furthermore, public health recommendations were not regularly used to give advice on physical activity by most health care providers, whereas the majority of the respondents indicated a need for training in the promotion of physical activity among arthritis patients.

• • • General discussion

Physical therapy is generally accepted to be an important part of the management of patients with rheumatoid arthritis (RA). In this thesis, a number of studies
addressing the evidence, content, delivery, and quality of physical therapy in RA were described.

**Physical therapy guidelines in RA**

This thesis describes the development of a physical therapy guideline for RA, aiming at the improvement of the quality of physical therapy in this patient group [chapter 3]. Developing a guideline is in general a complex, time-consuming and expensive process. To judge the rigor of the developmental process as well as the end product, a number of guideline appraisal tools have been developed. Examples of these are the Guidelines Quality Appraisal Assessment Questionnaire (GQAQ) and the Appraisal Instrument for Clinical Guidelines (AICG). One of the most frequently applied tools is the Appraisal of Guidelines Research and Evaluation (AGREE) tool [1]. When applying the AGREE tool on the Dutch physical therapy guideline it is of high quality [chapter 3]. However, areas for improvement are the AGREE topics piloting among target users (a field test), key review criteria for monitoring care and the formulation of recommendations. Indeed, we performed a field test to evaluate potential barriers and facilitators for the use of the guideline, by using a draft version. However, we used a self-developed questionnaire, mainly focusing on the content of the guideline (i.e. interventions and measurement instruments). Potential organizational barriers and cost implications were not taken into account. This highlights the need for more standardization concerning the field testing of guidelines.

Furthermore, key review criteria or quality indicators to monitor the provided care were not included in the guideline. Other multidisciplinary and monodisciplinary RA guidelines did not include quality indicators either [2-9]. Developing quality indicators is a process which requires a number of extra steps in addition to guideline development (for example prioritizing topics by means of different Delphi rounds) [10, 11]. As in the absence of quality indicators adherence to the guideline cannot be sufficiently measured, the development of quality indicators is strongly advocated. This development should preferably take place in the context of the guideline developmental process. First, because this process already involves all relevant stakeholders, so that the institution of expert
committees and Delphi rounds is relatively easy. Second, a large time gap between guideline development and quality indicator development is not desirable, as this may lead to discrepancies between the evidence for the recommendations and the evidence underlying the quality indicators. Another obstacle pertained to the formulation of recommendations. Recommendations in guidelines are usually based on evidence and expert opinion. With regard to evidence a frequently applied tool to grade the evidence is the EBRO classification (EBRO is a Dutch acronym for Evidence Based Recommendation Development) [12], which is in line with international schemes, such as the NICE approach (National Institute of Clinical Effectiveness) [13]. Evidence is graded from A (good quality study) to D (only expert opinion). However, such classifications are not detailed enough to weigh all combinations of available evidence, e.g. when 3 RCTs show that A is better than B, 1 RCT shows that B is better than A, and 2 RCTs show no difference between A and B). Regarding the formulation of recommendations, apart from grading the evidence, expert opinion plays a role. Expert opinion may not be in agreement with evidence from the literature, in particular when this is scarce and/or of low quality. The process of how expert opinion is weighted is often poorly described. Current guidelines for guideline development could probably provide more detailed and standardized descriptions on how evidence and expert opinion should exactly be translated into recommendations.

Regarding implementation of physical therapy guidelines, previous implementation studies have shown that overall adherence is insufficient [14, 15]. A number of studies have therefore examined how the usage of guidelines can be enhanced. Passive dissemination and traditional lectures were found to be ineffective implementation strategies for physical therapy guidelines on low back pain and whiplash [16, 17]. A more active implementation strategy is therefore essential in order to promote evidence based practice among physical therapists. Interactive education and clinical reminder systems related or a combination of these strategies were indeed found to be effective implementation strategies with regard to the usage of physical therapy guideline, although they did not affect patient outcomes [18]. These findings indicate that more research on the effect of different implementations strategies, for example interactive workshops and
Current physical therapy practice and extended roles in arthritis care

An inventory among Dutch physical therapists showed that current physical therapy management of patients with RA mainly consists of exercise therapy and education, whereas physical modalities, massage and passive mobilization are applied to a lesser extent [chapters 4]. Although this seems to reflect the recommendations in most of the guidelines on the management of RA, it was also found that expert physical therapists applied exercise therapy and education significantly more than general physical therapists. Furthermore, expert physical therapists focused their management more on the ICF chapter Activities and participation rather than Body functions and Body structures. Although this descriptive study gives some insight into daily physical therapy practice, the actual content of the interventions, as well as their intensity, duration, and frequency was not evaluated. A more detailed evaluation of current practice could probably be done by studying physical therapists’ patient records or by having interviews with physical therapists and patients with RA.

In addition to traditional tasks performed by physical therapists, extended roles are more and more discussed [19]. Extended roles of health professionals are the subject of debate in many countries, due to the increasing prevalence of rheumatic diseases, shortage of human resources and cost constraints. In the Netherlands it was found that only a small proportion of physical therapists are currently providing treatments that are outside the traditional scope of practice and that their interest in this field is limited [20]. This might be explained by the amount of rheumatologists in The Netherlands which is relatively high compared to other countries, such as Canada, so that the need for health professionals taking on roles from the rheumatologist is low. Whether extended roles are currently performed by health professionals or whether there is a need for extended roles among health professionals varies per country [19]. Potential barriers to performing extended roles are the attitude of rheumatologists and the attitudes of patients. Lack of knowledge, education and educational opportunities were also experienced in several countries [19]. Therefore in future projects with regard to...
extended roles among physical therapists the educational, the health care system, the rheumatology organization and legal aspects should be taken into account.

**Exercise and physical activity in RA**

It is generally known that obtaining and maintaining a sufficient level of physical activity is an important health goal in patients with RA. The effectiveness and safety of exercise and physical activity in RA have been widely established [21]. The literature reviews in this thesis and other systematic reviews on exercise and RA indicate that the majority of studies have mainly focused on the effectiveness of high intensity exercise programs, whereas the evidence with regard to exercise programs with a moderate intensity is scarce [21-23]. This indicates that in the future more research should be done in order to establish which intensity is most effective with regard to improving aerobic capacity, muscle strength, flexibility, functional ability, participation and overall quality of life. In addition, future studies should focus on cardiovascular outcomes. Although the literature suggests that RA patients are at an increased risk of cardiovascular disease [24], this outcome has not been used in studies on exercise and physical activity in RA. Studying the preventive effects of exercise in RA would require long-term studies, with large patient populations.

Another potential focus of research includes the reach of exercise and physical activity interventions and their adherence, since various studies have shown that patients with RA have difficulties in starting and/or continuing exercises, whether or not of vigorous or moderate intensity [25-30]. One aspect that could be related to maintenance is whether exercise programs are supervised or home-based. Until now, most research focused mainly on supervised programs. Although supervised programs might be more effective with regard to aerobic capacity and muscle strength, there are indications that the long-term maintenance of effects of home-based programs is better [chapter 7]. Among home-based exercise programs it was found that the majority of patients with RA did keep performing the exercises on the long-term (up to five years) [27]. To further incorporate exercises in patient’s daily routine without providing face-to-face contacts, the use of innovative techniques could be further enhanced. The Internet proved to be
a successful tool for a specific group of RA patients. It seems that approximately 20% will do well with only guidance through internet. For daily practice it would be helpful to specifically know which patients need face-to-face guidance of a physical therapist and for how long, and which patients will be able to do their exercises with guidance of a physical therapist through e-mail, phone calls and/or text messages, or other applications such as facebook, twitter, hyves and/or apps. Although various studies have shown that information technology can be successful in guiding patients [28, 29] towards more physical activity e-health has not yet been fully explored in physical therapy care in RA patients.

An additional aspect that needs to be taken into account is the notion that influencing health behavior such as physical activity is a complex process in which patients themselves play the most important role. In line with the self-determination theory it was seen in one of our studies that autonomous regulation (motivation) was associated with a higher level of physical activity. This could imply that health professionals should try to increase and support autonomous regulation in their patients in order to enhance patients’ physical activity level. A specific clinical method that fits this purpose is motivational interviewing (MI). However, according to the self-determination theory increasing autonomous regulation is not sufficient enough. It is hypothesized that patients need specific self-regulation skills, for example setting realistic goals and monitoring, to become and remain physically active. In a recent meta-analysis it was shown that psychological interventions, among which self-regulation interventions, might be beneficial for many RA patients, particularly when it comes to increasing physical activity levels [30]. Future physical activity programs should therefore probably have a stronger focus on increasing autonomous regulation and self-regulation skills.

Furthermore, the majority of health professionals and rheumatologists seem to have a positive attitude towards physical activity in patients with RA and actually try to promote physical activity in daily practice. However, the majority of health professionals felt not to have enough skills to promote physical activity effectively and expressed a need for further education. Therefore, additional education on how to establish this behavioral change and to promote physical
activity effectively is needed. How to establish a behavioral change is currently a major topic in health care, as physical inactivity and obesity are a major problem in Western societies. Therefore, it is recommended to incorporate this topic more in the basic education of health professionals and physician.

Perhaps the distinction which type of guidance patients need could be based on the amount of patients’ motivation. However, more research is necessary whether such distinction would be efficient. Furthermore it is unknown which self-regulation components should be incorporated in these interventions.

References


Summary and Discussion


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