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Author: Peter, Willem Frederik Hendrik (Wilfred)
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Chapter 6

Guideline recommendations for post-acute postoperative physiotherapy in total hip and knee arthroplasty: are they used in daily clinical practice?

W.F.H. Peter
R.G.H.H. Nelissen
T.P.M. Vliet Vlieland

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Abstract

Background: In a Dutch guideline on physiotherapy (PT) in hip and knee osteoarthritis, a number of recommendations on post-acute (i.e. after discharge from hospital) PT following total hip (THA) and total knee (TKA) arthroplasty were included. Little is known about the uptake of these recommendations in daily clinical practice.

Objective: The aim of the present study was to determine the extent to which the guideline recommendations regarding post-acute PT after THA and TKA are followed in daily clinical practice.

Methods: An online pilot survey on the delivery of post-acute, postoperative PT was sent to a random sample of 957 Dutch physiotherapists. The survey included questions on the application of recommended, neither recommended nor advised against, and advised against treatment modalities and various treatment modalities for which there were no formulated recommendations.

Results: A total of 219 physiotherapists completed the questionnaire, with a mean age of 40 years (standard deviation 12.6), 55% female and 95% working in primary care. The vast majority reported the use of the recommended exercise modalities (muscle strengthening exercises (96%), and functional exercises (99%)). Continuous passive motion, which was neither recommended nor advised against, and electrical muscle stimulation, which was not recommended, were provided by 1%. Reported treatment modalities for which there were no formulated recommendations included patient education (99%), gait training (95%), active range of motion (ROM) exercises (93%), balance exercises (86%), passive ROM exercises (58%), aerobic exercises (50%), massage (18%) and cold therapy (11%).

Conclusions: The vast majority of physiotherapists reported adhering to recommendations on post-acute postoperative PT in THA and TKA patients after discharge from hospital. Although yet to be confirmed in a larger nationwide survey, the relatively high frequency of use of many other treatment modalities, for which there were no formulated recommendations, suggests the need to extend the current set of recommendations to include evidence-based statements on additional treatment modalities.

Introduction

Osteoarthritis is the most prevalent chronic joint disease, and the most common reason for total joint replacement in the Netherlands. By 2009, the numbers of patients undergoing total hip arthroplasty (THA) and total knee arthroplasty (TKA) had risen to 1.6 and 1.2 per 1000 per year, respectively, in Western countries. Post-surgical rehabilitation is an integral part of the provision of THA and TKA, with physiotherapy (PT) being considered the gold standard to achieve functional independence and return to work and recreational activities. A systematic review on PT exercise after THA suggests that exercises, given in the post-acute phase, after discharge from hospital, have the potential to benefit patients, whereas PT exercise after TKA was found to have a short-term, small to moderate effect on function, range of motion (ROM) and quality of life. These overall beneficial effects were confirmed in two randomized controlled trials (RCTs) published after the reviews.

So far, the evidence on post-acute postoperative PT in THA and TKA has not been fully incorporated into practice guidelines and recommendations. The extent to which this lack of professional guidance plays a role in the observed, relatively large variation in the delivery, duration and intensity of PT care after THA and TKA remains to be established. Regarding the nature of the postoperative PT used in THA and TKA, in a telephone survey among 24 orthopaedic centres in the UK, group therapy including strengthening and stretching exercises was most often reported. Naylor et al. concluded in a nationwide survey that there was considerable practice variation with respect to the modes of rehabilitation after TKA among physiotherapy departments in hospitals in Australia.

In the Netherlands, an update of a PT practice guideline on hip and knee osteoarthritis was developed in 2010. The guideline was developed according to national and international methods for guideline development and implementation. To evaluate the effect of each relevant PT intervention, a systematic review was conducted. Regarding post-acute PT after THA or TKA, muscle strengthening and functional exercises were recommended; continuous passive motion (CPM) after TKA was neither recommended nor advised against, and electrical stimulation was advised against.

The present study aimed to examine, from the perspective of the physiotherapist, the extent to which both of the treatment modalities included in the recommendations, as well as those which were not mentioned in the guideline, were applied in daily clinical practice. This knowledge may guide the possible need for implementation strategies for the current guideline recommendations, and may indicate areas where additional guideline recommendations are needed.
Methods

This cross-sectional pilot study comprised a survey among physiotherapists working in primary and secondary care in the south-western part of the Netherlands. The study was conducted in October–November 2012. As the study concerned a survey to be completed anonymously and once only, with no reminders being sent, it fell outside the remit of the Dutch law (Medical Research Involving Human Subjects Act; MO), and no review by the Medical Ethical Committee of the Leiden University Medical Center was needed. The study was conducted in accordance with the Handbook for Good Clinical Research Practice of the World Health Organization, and Declaration of Helsinki principles (http://www.wma.net/en/30publications/10policies/b3/).

Recruitment of physiotherapists

A random selection of 1,000 physiotherapists was made out of 3,000 members of a subdivision of the Royal Dutch Society of Physiotherapy (Koninklijk Nederlands Genootschap voor Fysiotherapie; KNGF) in the south-western part of the Netherlands and registered in the quality register of the national society. In total, there are 20,000 physiotherapists in the Netherlands who are registered as such. The selection for the present pilot survey was made by a member of the national society who was not involved in the study. The south-western part of the Netherlands was chosen because an earlier study regarding the use of PT in THA and TKA from the patient perspective had been carried out in the same region. Selected physiotherapists were sent an invitation by email to complete a single questionnaire regarding PT treatment after THA and TKA. They were assured that if they participated, their data would be anonymized. No reminders were sent.

Survey of the PT provision

The survey was provided by means of NetQuestionnaire software (NetQuestionnaire®, Utrecht, the Netherlands). The participating physiotherapists were sent an email with a link to the questionnaire.

The physiotherapists were first asked about their characteristics: age, gender, work setting (private practice, primary care health centre, hospital, rehabilitation centre or nursing home), work experience (in general and specifically, with respect to the treatment of patients undergoing THA or TKA: 0–5 years, 6–10 years, 11–15 years, 16–20 years, more than 20 years), number of new THA and/or TKA patients treated in the previous six months (0–5, 6–10, 11–15, more than 15) and if they had taken part in any postgraduate education regarding the management of THA and TKA patients (yes/no). Subsequently, they were asked who made referrals to them (orthopaedic surgeon, general practitioner or patient self-referrals, without the involvement of a physician; more than one answer was possible); the frequency with which they saw each patient (once a week, twice a week, three times a week or more); the estimated average duration of each session (two, four, six, 8–12 weeks, more than 12 weeks); the mode of delivery (individual, group therapy, aquatic therapy; further answers could be added). Questions were then asked about the provision of specific PT treatment modalities (yes/no):

1. Recommended treatment modalities (muscle strengthening exercises and functional exercises, the latter divided into individualized physical activities);
2. Treatment modalities which were neither recommended nor advised against (CPM after TKA);
3. Treatment modalities which were not recommended (physical modalities other than massage, heat and cold therapy, including electrical stimulation);
4. Treatment modalities which were not included in the guideline (active ROM exercises, aerobic exercises, gait training, balance exercises, massage, heat and cold therapy, passive ROM exercises and patient education).

Statistical analyses

Descriptive statistics were used for the characteristics of the physiotherapists and the provided PT treatment. Data were analysed using the SPSS statistical package (version 20.0, SPSS, Chicago, IL, USA).

Results

In total, 1,000 emails were sent to the 1,000 selected physiotherapists, of whom 43 were returned immediately because the email addresses were incorrect. Of the remaining 957, 31 responded that they were not eligible to participate as they were not treating THA or TKA patients after surgery. In total, 219 physiotherapists completed the questionnaire.

Characteristics of the physiotherapists

Table 1 shows the characteristics of the 219 physiotherapists participating in the study. The mean age was 40.4 (standard deviation 12.6) years, 120 (55%) were female, 208 (95%) were working in primary care, 194 (57%) had over ten years of work experience as a physiotherapist and 114 (53%) had more than ten years of experience in working with THA and TKA patients. Ninety-five (44%) had seen more than five THA and TKA patients in the previous six months, 62 (28%) had undertaken postgraduate education in perioperative PT in joint replacement surgery. Referrals were most often made by the orthopaedic surgeon (n = 214; 98%). The vast majority of physiotherapists (n = 180; 83%) indicated that the average frequency was twice a week with which they saw patients, with 141 (65%) reporting that the average duration of treatment was more than 12 weeks. Almost all of them treated patients individually and 54 (25%) provided additional group therapy.
Table 1 shows the reported frequencies of treatment modalities which were either recommended, not recommended or advised against, or not mentioned in the guideline. A total of 210 physiotherapists (96%) reported providing muscle strengthening exercises, whereas 218 (99%) indicated the use of at least one type of functional exercise from the list provided.

The numbers (%) of physiotherapists reporting the use of specific functional exercises were: walking stairs (n = 207; 95%); getting up and sitting down (n = 198; 95%); walking exercises outdoors (n = 187; 85%); cycling outdoors (n = 87; 40%); and other individualized functional activities (n = 125; 57%).

Physical treatment modalities (e.g. CPM, which was neither recommended nor advised against, and electrical muscle stimulation, which was advised against) were reported by three respondents (1.4%). The numbers (%) of responders reporting the provision of treatment modalities for which there were no formulated recommendations were patient education (n = 218; 99%), gait training (n = 208; 95%), active ROM exercises (n = 204; 93%), balance exercises (n = 188; 86%), passive ROM exercises (n = 126; 58%), aerobic exercises (n = 109; 50%), massage (n = 39; 18%) and cold therapy (n = 25; 11%).

Discussion

The present study showed that the recommendations in the Dutch PT guideline regarding post-surgical PT were being followed by 95% or more of the physiotherapists in the study sample. Apart from the treatment modalities recommended in the guideline, many other PT interventions were being used by relatively large proportions of physiotherapists.

The recommendations in the Dutch guideline were in line with those made by Westby et al., who advocated the use of muscle strengthening and functional exercises. However, in the study by Westby et al. >80% of the expert panel rated gait training and balance training as very important, while these interventions were not specified in the Dutch guideline recommendations. Westby et al. formulated no recommendations regarding physical modalities such as CPM and electric muscle stimulation. Patient education was not included in the Dutch guideline, whereas the expert panel in the study by Westby et al. rated monitoring for complications, position/movement restrictions and return to driving as very important. These aspects were not examined in the present study. The difference between the elements of patient education advised by the expert panel in the study by Westby et al. and those considered relevant in the Dutch survey may indicate that there are differences between countries, and underline the need further to study the optimal content of patient education by physiotherapists after THA and TKA.
The relatively high uptake of the recommendations in the Dutch guideline, as observed in the present study, is difficult to compare with other studies, as to our knowledge no other studies have addressed the adherence of physiotherapists to guidelines on THA or TKA management. In one survey study, which did not examine adherence to specific recommendations, but rather clinical practice in THA or TKA, 83% of the 35 physiotherapists studied reported providing exercises (open/closed chain and resistance exercises and biking) and 57% functional exercises (gait retraining, stairs, sitting to standing) postoperatively.13 The present study showed that many treatment modalities other than those explicitly mentioned in the guideline were frequently applied. In particular, patient education, gait training, balance training and active ROM exercises were reported by over 80% respondents. Whereas 99% of the respondents in the present study reported providing patient education, this figure was only 11% in the study by Naylor et al.13 Our survey was broader than the recommendations included in the guideline alone, providing information not only on other treatment modalities, but also on the process of post-acute, postoperative PT care in THA and TKA. Regarding the delivery of care, most physiotherapists in our study provided individual postoperative PT, with 25% reporting group therapy in addition to individual therapy. In a survey by Artz et al.14 from the UK, group therapy was found to be more common than individual therapy, and in the survey by Naylor et al.13 62% of patients who underwent TKA received group therapy and 75% individual treatment. Concerning the duration of postoperative PT, Naylor et al. reported an average duration of 5–6 weeks, whereas in our study 65% of physiotherapists reported an average duration of more than 12 weeks. Westby et al.10 did not recommend a specific duration, but greatest support by the expert panel in that study was for 4–12 weeks, probably related to the fact that randomized controlled trials on postoperative PT in THA or TKA always concerned treatment protocols of 6–12 weeks. However, Westby et al. also stated that frequency and duration of treatment should be tailored to patients’ specific needs and rehabilitation goals. The variation in post-acute rehabilitation in THA and TKA within and among studies has previously been noted in the literature.15 This variation underlines the need to underpin far more interventions than those included in the Dutch guideline with evidence, and formulate clear recommendations about their use, irrespective of whether they are recommended, neither recommended nor advised against, or advised against. Moreover, the development of clear recommendations about the optimal timing, frequency, and duration of post-acute, postoperative PT after THA and TKA seems justified.

The observation that the guideline investigated in the present study mentioned only a few interventions explicitly, while many more are used in daily practice, points at a potential weak spot in the development of clinical practice guidelines: the selection of topics. It is important that this selection is made in close collaboration with the end-users of the guidelines, and that it includes in particular topics that are an indispensable aspect of care and reflect high-quality management. The update of the guideline

<table>
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<th>Table 2</th>
<th>Guideline recommendations and self-report post-operative physiotherapy by 219 physiotherapists regarding treatment of hip and knee osteoarthritis patients undergoing joint replacement surgery.</th>
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</table>
| **Recommended treatment modalities** | **Functional exercises**
Number (proportion) 210 (96%) |
| **Muscle strengthening exercises** | Walking stairs 207 (95%)
Rising and sitting down 208 (95%)
Cycling outside 87 (40%)
Other individualized physical activities 125 (57%) |
| **Recommended treatment modalities** | **Continuous Passive Motion (CPM)**
Number (proportion) 3 (1%)
Other physical interventions |
| **Recommended treatment modalities** | **Electrical muscle stimulation after surgery**
Number (proportion) 0 (0%)
Other medical interventions |
| **Recommended treatment modalities** | **Active Range of Motion exercises**
Number (proportion) 204 (93%)
Aerobic exercises (including cycling modeled on a hometrainer) 109 (50%)
Gait training 208 (95%)
Balance exercises 188 (86%)
Heat therapy 0 (0%)
Cold therapy 25 (11%)
Passive Range of Motion exercises 126 (58%)
Patient education after surgery 218 (99%)
Advice regarding scar tissue self-massage 90 (41%)
Advice regarding fluid balance and leg loading restrictions 209 (95%)
Adaptations for at home personal or domestic help 92 (42%)
Instructions for the use of walking aids 195 (89%) |
| **Recommended treatment modalities** | **Other medical interventions**
Number (proportion) 65 (29%)
Other medical interventions |
| **Recommended treatment modalities** | **Patient education after surgery**
Number (proportion) 218 (99%)
Advice regarding scar tissue self-massage 90 (41%)
Advice regarding fluid balance and leg loading restrictions 209 (95%)
Adaptations for at home personal or domestic help 92 (42%)
Instructions for the use of walking aids 195 (89%) |
in the present study was done according to recommendations for the development of guidelines, with the selection of topics being done by an expert committee. The results suggest that more physiotherapists from clinical practice should be involved in the selection of topics for the guideline.

The present survey had a number of limitations. First, 219 of the 957 eligible physiotherapists responded. Only 31 stated that they were not treating patients after THA and TKA. It remains unclear how many of the other 707 physiotherapists did not see patients after THA and TKA but did not state this in the questionnaire, so it is difficult to calculate a true response rate. Assuming that all of them did treat patients after THA and TKA, the response rate would be 23%, but this is likely to be an underestimation. Nevertheless, this would be in line with the response rates seen in other Dutch surveys and TKA, the response rate would be 23%, but this is likely to be an underestimation.

In the present study, it was assumed that all the 957 eligible physiotherapists did treat patients after THA and TKA but did not state this in the questionnaire, so it is difficult to calculate a true response rate. Assuming that all of them did treat patients after THA and TKA, the response rate would be 23%, but this is likely to be an underestimation. Nevertheless, this would be in line with the response rates seen in other Dutch surveys and TKA. It remains unclear how many of the other 707 physiotherapists did not see patients after THA and TKA but did not state this in the questionnaire, so it is difficult to calculate a true response rate. Assuming that all of them did treat patients after THA and TKA, the response rate would be 23%, but this is likely to be an underestimation. Nevertheless, this would be in line with the response rates seen in other Dutch surveys and TKA, the response rate would be 23%, but this is likely to be an underestimation.

Second, in line with the study by Artz et al., we did not gather data on THA and TKA separately. Outcomes after THA and TKA may differ, and information regarding the PT strategies in daily practice for THA as distinct from TKA may be valuable. It was also mentioned in the expert consensus recommendations by Westby et al. Third, the information from the present study was based on self-report, so the provision of socially desired answers cannot be ruled out. Moreover, the question on CPM and electric muscle stimulation were combined. However, as only three physiotherapists indicated using these interventions, this does not influence the results regarding the use of these modalities. Finally, the answers of the physiotherapists represented an average of what they provided in daily practice. They were not able to give information on individual cases. It would be interesting to know the considerations and adaptations in treatment that are made in individual cases, such as patients with substantial co-morbidity.

In conclusion, we found that the recommendations in the Dutch PT guideline on postacute, postoperative PT in THA and TKA were followed in daily practice. However, a considerable number of treatment modalities and the frequency, duration and intensity of PT after THA and TKA were not included in the guideline, leading to a large variation in the provision of care. In future research, the survey should be improved based on the mentioned limitations, and carried out nationwide wide to confirm the results of the present study. Further research should then focus on modes of delivery and other treatment modalities on which recommendations can be formulated, including those that cannot be recommended, in order to provide more evidence and consensus-based recommendations on postoperative PT in hip and knee osteoarthritis and therefore improve the quality of PT care for THA and TKA patients.

References

