Facilitators and Barriers to Exercising Among People With Osteoarthritis: A Phenomenological Study

Unnur Petursdottir, Solveig A. Arnadottir, Sigridur Halldorsdottir

Background. Evidence indicates that regular exercise improves the well-being of individuals with osteoarthritis (OA). However, these individuals seem to exercise less frequently than the general population and seem to have limited adherence to exercising.

Objectives. The purposes of this study were: (1) to increase knowledge and understanding of the experience of exercising among individuals with OA and (2) to determine what they perceive as facilitators and barriers to exercising.

Design and Method. This study used a qualitative method, based on the Vancouver School of doing phenomenology, involving purposive sampling of 12 individuals and 16 interviews. The participants, 9 women and 3 men, were 50 to 82 years of age.

Results. Extended information on exercise behavior among people with OA is presented in a model in which internal and external facilitators and barriers to exercising are delineated. Based on this model, a checklist is proposed for physical therapists’ assessment of these factors. Internal factors include individual attributes and personal experience of exercising, whereas external factors include the social and physical environment. The participants expressed how each of these internal and external factors could act both as a facilitator and a barrier to exercise participation and the pattern of exercising; for example, the presence of pain was an important aspect concerning internal barriers to exercising, whereas the hope of less pain was one of the main facilitators.

Conclusions. Increased knowledge and understanding of the factors influencing exercise behavior in people with OA can help physical therapists and other health care professionals support them in initiating and maintaining a healthy exercise routine and, consequently, achieving a better quality of life.
Osteoarthritis (OA) is the most prevalent of arthritic diseases and has a great influence on activities and participation in the daily life of millions of people worldwide.\textsuperscript{1,2} The joints of the hips, knees, hands, and spine are those most often affected by OA, and about half of the people with OA have the disease in more than one joint.\textsuperscript{3} Osteoarthritis is twice as common among women as men, and known risk factors are heredity, obesity, trauma, occupation, malformation of joints, and older age.\textsuperscript{2}

Research indicates that the majority of people with OA in their knees or hips can benefit from strengthening and general fitness exercises to reduce pain and increase fitness and mental well-being.\textsuperscript{4–11} The few research results available on people with generalized OA\textsuperscript{12,13} also indicate that exercise reduces symptoms and increases general function.\textsuperscript{14,15} However, people with OA seem to exercise less frequently than the general population,\textsuperscript{16} and exercise adherence is a common problem among these people.\textsuperscript{17–19}

Factors that may play an important role in explaining the exercise behavior of people with OA include self-confidence and self-efficacy,\textsuperscript{14,17,19–21} knowledge of the disease and the effects of exercise,\textsuperscript{14,18,20–22} the support and attitude of others,\textsuperscript{14,18,20–21} mental health,\textsuperscript{21} and former experience of exercising.\textsuperscript{14,18,20,22} Pain and stiffness are common symptoms of arthritis that also can have a significant impact on the attitude and capability of people to exercise,\textsuperscript{22,25} as well as the common misunderstanding that OA is something that comes naturally with older age and that nothing can be done about it.\textsuperscript{22,26} Moreover, encouragement by a physician to exercise or the lack of such encouragement has been shown to be of importance.\textsuperscript{22,27} Despite this important information, more research is needed to increase knowledge and deepen understanding of what determines whether people with OA exercise, given the known beneficial effects of exercise.\textsuperscript{14} The results from a few qualitative studies on exercise behavior of people with OA\textsuperscript{18,20,22,25} demonstrate how these goals may be achieved by listening and learning from the life experience of people with OA.

One of the main questions the National Institute for Health and Clinical Excellence\textsuperscript{12} has put forward to be answered in future research is: Which are the most important factors influencing exercise adherence of people with OA? This study was a response to that call. The focus of the study was on people with OA, with the aim of increasing knowledge and understanding of what they experience as facilitators and barriers to exercising.

**Method**

Research in physical therapy has mainly been conducted within a quantitative paradigm.\textsuperscript{28} There is, however, an increasing understanding within the physical therapy community that this approach has resulted in a lack of knowledge and viewpoints within the profession, especially regarding the patient’s perspective.\textsuperscript{29–31} In the present study, the Vancouver School of doing phenomenology was the method chosen to answer the research question because it has proven useful in increasing knowledge and deepening understanding of human phenomena.
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Table 1.
The 12 Basic Steps of the Research Process of the Vancouver School of Doing Phenomenology and How They Were Followed in the Present Study

<table>
<thead>
<tr>
<th>Steps in the Research Process</th>
<th>What Was Done in the Present Study</th>
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<tr>
<td>Step 1. Selecting dialogue partners (the sample).</td>
<td>12 participants with osteoarthritis (3 men, 9 women), 50 years of age or older, living in urban areas.</td>
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<td>Step 2. Silence (before entering a dialogue).</td>
<td>Preconceived ideas were deliberately put aside.</td>
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<tr>
<td>Step 3. Participating in a dialogue (data collection).</td>
<td>One or 2 interviews with each participant, for a total of 16 dialogues. All the interviews were conducted by the first author.</td>
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<td>Step 4. Sharpened awareness of words (data analysis).</td>
<td>Data collection and data analysis were done concurrently.</td>
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<tr>
<td>Step 5. Beginning consideration of essences (coding).</td>
<td>Trying repeatedly to answer the question: What is the essence of what this research participant is saying?</td>
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<tr>
<td>Step 6. Constructing the essential structure of the phenomenon from each case (construction).</td>
<td>The main factors in each participant’s story were highlighted, and the most important factors were constructed into an analytic framework.</td>
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<td>Step 7. Verifying each case construction with the relevant participant (verification).</td>
<td>This was done with 4 participants.</td>
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<td>Step 8. Constructing the essential structure of the phenomenon from all the cases (constructing the analytic framework).</td>
<td>All of the researchers participated in this final data analysis process and made sure the model and framework constructed were based on the actual data.</td>
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<tr>
<td>Step 9. Comparing the essential structure of the phenomenon with the data (meta-synthesis of all the different case constructions).</td>
<td>To ensure this factor, all the transcripts were read over again.</td>
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<tr>
<td>Step 10. Identifying the overriding theme that describes the phenomenon (constructing the overriding theme).</td>
<td>Facilitators and barriers influencing exercise behavior among people with osteoarthritis were identified.</td>
</tr>
<tr>
<td>Step 11. Verifying the essential structure with some research participants (verification).</td>
<td>The results and the conclusions were presented to and verified by 2 participants.</td>
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<tr>
<td>Step 12. Writing up the findings (multivoiced).</td>
<td>The participants are quoted directly to increase the trustworthiness of the findings and conclusions.</td>
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within the various fields of health care.32 This qualitative method is characterized by 12 basic steps. Table 1 presents how the steps were followed in the present study. All participants signed an informed consent statement, and actions were taken to protect the participants’ anonymity (eg, by using pseudonyms in all data analyses and reporting of results).

Sample
A purposeful sample was used in which selection of participants was based on their experience of the phenomenon studied.32 Participants had to have a minimum of 5 years’ history of OA, have symptoms confirmed by radiography, and be 50 years of age or older, as from that age the prevalence of the disease increases considerably.2,3 Furthermore, they had to live in an urban area in order to have comparable access to health care and exercise facilities, be capable of a dialogue, and be ready to share their own experience of facilitators and barriers to exercising.

Advertisements were placed in several rheumatologists’ and physical therapists’ outpatient clinics, as well as in a national newsletter for people with arthritis. All 24 individuals (18 women and 6 men) who volunteered for the study were personally contacted by the first author. Participants were selected in accordance with the variance of the relevant factors involved32 (ie, regarding the number of men and women, different age groups, and people who had had both positive and negative experience of exercising). Fourteen individuals met the inclusion criteria, but saturation was reached when 12 individuals (9 women and 3 men) had been interviewed once or twice. Further information about the sample is shown in Table 2.

Data Collection and Data Analysis
A total of 16 interviews were conducted in the participants’ homes. Each interview lasted from 30 to 90 minutes (mean=53 minutes). Research participants were encouraged to express themselves freely in answering the research questions (Fig. 1). The interviews were tape-recorded and transcribed verbatim. The data analysis was based on the Vancouver School of doing phenomenology.32 The transcripts were read through several times, and topics that seemed to have special relevance to the research question were highlighted. In that way, themes were constructed that were finally amalgamated into an analytic framework, in accordance with steps 3 to 6 of the Vancouver School (Tab. 1).
This procedure was repeated for each participant, constantly repeating steps 1 to 6, until we were confident that the whole picture of the participants’ stories had been captured and no new information could be obtained. At that point, saturation was considered to have been reached. No computer software was used for coding or analyzing the data. The results are presented in a model that is encouraged within the Vancouver School.32

Validity and Reliability
The research process of the Vancouver School has some built-in strategies designed to increase validity and reliability, particularly steps 7, 9, and 11 (Tab. 1). The researcher triangulation in this study proved fruitful, where the expertise of 3 professionals, 2 physical therapists, and 1 expert in qualitative methods were combined. Triangulation is one of the method’s strategies designed to increase validity and reliability.32

Role of the Funding Source
This study was funded by a grant from the Icelandic Physical Therapy Association Scientific Fund. The sponsor reviewed a study proposal, but had no other role in the study.

Results
The main results of the study are presented in the model (Fig. 2) representing the participants’ experience, where internal and external facilitators and barriers to exercise are delineated. The internal factors include several themes categorized as individual attributes and personal experience with exercising. The external factors include several themes categorized into social and physical environments. These internal and external factors can act as facilitators or barriers to exercising. In Figure 2, arrows are used to indicate how the internal factors can influence the external factors, and vice versa, and how the exercise behavior is influenced by both.

The participants who were influenced predominantly by facilitators described themselves as more successful in including exercise as a part of their lifestyle compared with those participants who were more or less predominantly influenced by barriers to exercise. Based on this information, we constructed a checklist of facilitators and barriers that influence exercise behavior among people with OA (Fig. 3).

**Internal Factors—Individual Attributes**
**Motivation.** The influence of motivation was evident in the study, emerging from various sources. Some participants based their moti-
vation on the fact that they liked physical activity and, therefore, had been physically active. "I have always enjoyed physical activity" (Audrey). They were eager to find activities and exercise that fitted them and, in many cases, adapted their exercises to their life with OA. We refer to this as motivation by enjoyment.

Other participants were motivated by the results of the exercise, not because they liked it or enjoyed it. "I did it because I knew it was good for me, but not because I liked it" (Ellen). We refer to this as motivation by results. One of the participants seemed to lack the motivation to exercise, based on an overwhelming experience of boredom while exercising. She declared that she would never, ever exercise, no matter what. "It is dead boring, so I just don’t do it and never will" (Mary).

**Personality.** The personality traits of adaptability and initiative had a strong influence on the exercise behavior of the participants. "I worked out new ways to cope, to keep my arthritis from getting in the way too much" (Betty). They described the importance of not letting the OA control their lives, although its existence should be recognized and respected. Many participants talked about the importance of mental health and the importance of being positive, cheerful, and not lingering on negative circumstances. "I think that general positivism is part of your health; if you think constantly about pain and aches, then you get really sick" (Indy).

**Self-image.** Many of the participants described how they had to fit their OA into their self-image and adapt their lives to it. Some of the
younger participants seemed frustrated. “I was extremely unhappy with myself... I couldn’t work as hard as before, and I just could not understand why. It was one of the hardest things, to accept myself as what I had become” (Audrey). The older participants expressed greater acceptance. “Well, you have to face the fact that you are not young anymore, and you just have to slow down” (Hans).

### Health and exercise attitude

Attitudes toward one’s own health and exercise were described. “You cannot let the arthritis overtake you... I was not going to let the arthritis stop me” (Audrey). Addi-
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tionally, the participants reflected on what to do in order to remain as healthy as possible. “I have always taken walks and attended gym classes of some kind. That is why I am still standing” (Gerda).

Exercise history. The only participant who had never wanted to exercise described her very low endurance as a young adult and her experience of early defeat in sports and physical activities; that is, she had begun early in life with a negative attitude toward exercise, which she was unwilling to review or change. “I played sports when I was young, but then I quit. I never had any endurance, so I was never good at it” (Mary). Her prior, negative experience seemed to have kept her from physical activity during her whole life.

Disease knowledge. Participants’ knowledge of both general health and OA was of high importance. “Now I think I handle it more wisely. I know better because I’ve been fortunate to get good instruction” (Audrey). Most of the participants had experienced being educated by their physical therapists. Some participants wondered how to get such information to the public. “There are many 60+year-olds who don’t use computers to get information. And these are the people with arthritis! I think it is much easier to get information to the younger people. We use the Internet” (Audrey).

Internal Factors—Personal Experience
Effect of pain. Pain was a crucial issue in the interviews, being a barrier in itself, but the hope of decreasing the pain by exercising turned out to be a major facilitator to encourage regular exercise. “I know that when I’m done I feel better. That’s what I’m constantly after” (Nancy). The participants described the difficulty of having to constantly adapt their exercise pattern to pain that could vary from day to day and even be too intense to be able to exercise at all.

Effect of stiffness and fatigue. Stiffness and fatigue were barriers to exercising. “It was like my body was made of lead” (Kirsten). As with the pain, however, the experience of less stiffness and more stamina turned out to be facilitating. A few of the women mentioned “paralyzing fatigue” as a major barrier for getting anything done and felt it might be related more to mental fatigue than to physical fatigue. One woman expressed her deep concern regarding how pain and fatigue led to difficulties with personal hygiene. She believed that people with chronic pain hesitate to exercise because they do not feel up to taking a shower afterward. “The effort to get clean afterward is really hard. . . . You just don’t have the energy to take a shower” (Kirsten).

Finding suitable exercise. The participants described the importance of suitable exercise and their experience of how exercise should progress gradually under the supervision of a qualified person. “I think that physical therapists are the best to help those who have a physical dilemma to start exercising . . . and start carefully, and under supervision. I think that is very important” (Audrey). However, many participants mentioned the importance of finding an enjoyable training mode. “And I think that it is important when people choose which exercises to do, that you enjoy it, that you feel it is rewarding . . . these positive factors have to be present” (Audrey).

Perceived benefits of exercising. Many benefits of exercising concerning the OA symptoms were mentioned. Other general effects were mentioned as well, such as increased fitness and a better heart condition. “Exercising has a good effect on everything, including the heart” (Carl). Additionally, most of the participants agreed that physical exercise improved their mental well-being. “I am more vivacious, both physically and mentally” (Carl). Participants talked about the importance of keeping their weight down and addressed the concern of gaining weight. “I feel it right away if I gain a pound; I feel it in my hips and knees” (Laura). They also mentioned the connections between impaired mobility and obesity. “Well, if you don’t move, you get fat, no matter how little you eat” (Gerda).

Quality of sleep. The significance of a good night’s sleep was a factor that influenced both the inclination and ability to exercise. “Then you get lazy [because of a bad night’s sleep]” (Carl). The participants also described how activity improved sleep. “All activity is good for sleep” (Audrey).

External Factors—Social Environment
Family support. The support, caring, and encouragement of others were among important external factors influencing how much the participants exercised. “Yes, my wife, naturally, she encourages me” (Carl). Most of the participants seemed to feel the need for such encouragement. Yet, when talking about the family’s attitudes toward the disease and the importance of exercise, some of the women expressed having a hard time justifying to themselves and their families their need to spend time exercising. One of them said about the experience of a non-supportive husband: “It [the experience of lack of support] was, just, what should I say, totally pathetic. . . . I guess men are not all equally understanding” (Audrey).

Physical therapists’ professional care. All participants had some experience with physical therapists,
most of it positive, and many participants placed emphasis on the fact that the encouragement and understanding they received from their physical therapists were very important. “Well, I always say that my physical therapist is as good as any psychologist” (Gerda). The importance of listening and good communication was highlighted and seemed to play a big role in the perceived benefits of physical therapy.

Physicians’ encouragement. The encouragement of physicians to exercise was very important to some of the participants. This encouragement (ie, whether physicians emphasized exercise), however, varied. “He encourages me in every way” (Carl). “They have not done it [encouraged exercising]” (Gerda). Whether physicians referred their patients to physical therapists also varied. “They [the physicians] are positive if you ask [for a referral to a physical therapist], but you have to ask” (Gerda).

Training partners. Some of the participants emphasized the importance of training partners. “I like exercising in a group the most. . . . I’m more reluctant to go alone into the gym” (Gerda). Other participants preferred to exercise alone. “I like being free when it comes to training time and just decide for myself when I do it and when I don’t” (Betty).

Socioeconomic status. The cost of exercising indoors (eg, using a gym) turned out to be a barrier for those participants with low income. “And this costs money. Walking, however, is free. Such things matter when you only have your pension” (Carl).

External Factors—Physical Environment

Effect of weather. Weather conditions were frequently mentioned. Many of the participants believed that weather or climate directly influenced their OA symptoms. “Weather controls almost totally how I feel. I feel good when it’s warm, but horrible when it’s cold and damp. And I’m miserable during high winds” (Kirsten). The participants described how environmental factors such as high winds and icy conditions prevented them from going outdoors to exercise, such as walking. Some participants felt they were more sensitive to cold after they contracted arthritis.

Availability of exercise classes. The availability and variety of exercise classes in the participants’ neighborhoods were quite good. Still, the participants mentioned that appropriate exercise classes often were difficult to find, and sometimes it was difficult to get information about them. “The problem was that I never found any that suited me” (Kirsten). “Well, there was this note on the wall saying the aqua-exercise classes are about to start. . . . But for whom?” (Audrey).

Accessibility of facilities. Sometimes, the accessibility of training facilities was poor and the equipment not user-friendly. “If I was a boy or a man, I would kick those machines; I hate adjusting them, it takes half the time” (Audrey). The main hindrance to accessibility was stairs. “Walking upstairs is the worst thing for me” (Gerda). When walking outside, the lack of benches was mentioned as a barrier.

Transportation. The participants described varying types of transportation. Most participants drove by themselves, but some participants had to rely on other people. “But now I’ve decided to quit driving” (Kirsten). Two participants used a service for disabled people.

Exercise Behavior

Self-directed exercise. The majority of the participants exercised independently but in different ways. Swimming in warm, geothermal swimming pools (readily available in Iceland) was the most popular activity. “The swimming pools are what I would recommend to every person with OA” (Nancy). Apart from that, most of the participants went regularly for a walk, some daily.

Individual physical therapy. Four participants exercised under the supervision of a physical therapist at the time of the interviews. “What keeps me going now is attending physical therapy sessions” (Gerda). These participants described how the physical therapists kept them going and that the therapists were sometimes the key to going on.

Group exercise. Two of the women attended aqua-exercise classes. “I think it is the best exercise class I’ve ever attended” (Audrey). Some had been forced to switch groups based on their OA progression through the years.

No exercising. Only one woman did not exercise. “There is nothing that can be done about the OA; therefore, I do nothing” (Mary). She worked part-time and believed that was quite enough activity.

Discussion

The results of this study, based on a phenomenological approach, yielded valuable insights into the various internal and external factors influencing exercise behavior among people with OA. Despite the variety of experiences related to exercise behavior, a theoretical model and a practical checklist for physical therapists’ assessments were constructed from the data presenting the essence of these factors, emphasizing whether they act as either fa-
Facilitators or barriers to exercising. However, the limitations of this study should be kept in mind when interpreting and implementing the results. First, it is likely that a study of this type is biased toward positivity, because optimists and people with initiative may be more willing to volunteer. Second, advertising for participants in outpatient clinics and a newsletter for people with OA may present a selection bias toward participants with more advanced OA than the general population of people with OA. Third, the results are limited to those participants who could communicate fluently. Finally, as in all qualitative studies, the researchers’ preconceived ideas can cause a bias.52

Influence of Internal Factors

The participants in our study drew attention to various motives for exercising. The different sources of motivation are seldom discussed within physical therapy, and the definition of the concept often is vague. Scholars are far from unanimous about what constitutes motivation and have variously described it as instinct, drive, motive, and initiative.53–54 and defined it as a mixture of drive and goals.55–56 However, our participants expressed motivation in 2 ways: motivation by enjoyment and motivation by results. Motivation by enjoyment is the predominant factor when people perform activities because it makes them feel good during or afterward, whereas motivation by results is predominant when the key factor in exercising is the reward that comes at the end. The majority of our participants enjoyed exercising, although their experience of enjoyment varied. These participants had chosen types of exercise that they enjoyed and thereby managed to sustain motivation and, therefore, adherence to exercising. Other researchers have noted that enjoyment while performing the exercise is one of the factors that is very important concerning adherence to exercise among people with OA.14–37 Interestingly, despite the absence of motivation by enjoyment, some of our participants based their exercise adherence on motivation by results; that is, they exercised regularly, as they were convinced that exercising was good for them. These results emphasize the importance of recognizing each individual’s source of motivation, if the plan is to encourage people with OA to exercise. It is vital to check whether motivation by enjoyment is present and, if not, to try to activate motivation by results. If motivation is vague, it might be boosted with education and by emphasizing the expected results, as has been noted in the literature.21 From the results of our study, it seems that exercise is more likely to be engaged in and more effective if motivation by enjoyment is present; therefore, it is worth considering how the enjoyment factor can be increased, such as choosing different kinds of exercises.38–39

Our results indicated a strong connection among internal locus of control, high self-efficacy, and active coping. These are all known psychological factors39–42 that have been emphasized in exercise among people with painful conditions, such as OA.14 External locus of control43 seemed to concur with low self-efficacy and more passive coping among our participants. In accordance with Stanton et al.,42 adaptation seemed to be a valuable characteristic of our participants who were actively coping, as was general positivism.42 Believing in exercise as a part of the OA treatment was an exercise facilitator for most of our participants, as has been reported in other studies.14,40,41 Whether our participants’ former exercise experience was enjoyable or marked by defeat and surrender seemed to affect their present attitude toward exercising and to fit Bandura’s theory on self-efficacy,44 which postulates that the more often people have succeeded in the past, the more self-efficacy they have in the present. Those individuals who seem to have no willingness to alter their lifestyle are the hardest to motivate. In order to try to increase self-efficacy and thereby achieve a healthier lifestyle, highlighting possible past positive experiences has been tried, as well as pointing out others who do well, despite the disease and its discomfort. Facilitating a positive attitude and getting people in the individual’s social surrounding to do the same also has been tried.44 All of the participants agreed that exercising was good for them, but some individuals had a difficult time putting that belief into practice. Those participants who had managed to make exercise a part of their daily routine experienced good results, which is in accordance with Lin and colleagues’ conclusions that if people with OA exercise regularly, the results can be very good.6

It was evident in the participants’ descriptions that pain was surely a barrier to exercising, but the hope of less pain, or at least bearable pain, was a major facilitator for many participants. Whether or not people with OA include exercise in their lifestyle, the attitude toward pain is a fundamental factor.40,41 Fatigue was most prominent in the descriptions of the participants with general OA. The paralyzing fatigue that these participants described evoked our concerns regarding the possible connections between general OA and fibromyalgia, where chronic fatigue is one of the main symptoms. Furthermore, the results of one study45 indicated that people with OA experience notable amounts of fatigue that affects their lives.

Problems with personal hygiene were not addressed in previous stud-
ies we found concerning OA and exercise. This could be a hidden problem facing people with OA, limiting their ability and willingness to participate in exercise.

Finding out what level and type of exercise were suitable came with experience to some participants, but other participants were constantly overdoing exercising, with negative consequences. In Roessler and Rasmussen’s study, 15% of the participants dropped out of exercising because they felt the training was too difficult and caused them more pain. This is an important point for physical therapists to keep in mind and indicates that sometimes professionals may misjudge the capacity of their clients. The instructions from a Swedish health organization, FYSS, emphasize that people with general OA need to be particularly careful when starting exercising.

Weight control is one of the main issues that the National Health Service emphasizes in the management of OA, and in our study, the effects of exercise on weight control were highlighted by many participants, indicating their awareness of the problem.

Influence of External Factors
The attitude and support of the immediate family are psychological factors that are of great importance. In the clinical guidelines of the National Health Service, the importance of family education is emphasized in the treatment of people with OA, a factor that was underscored by our participants.

When participants talked about physical therapy and physical therapists, it was clear that communication and a sense of a positive connection were equally as important as the physical results of the therapy. This importance of communication is in harmony with one study reporting this factor. Professional caring has not been focused on in the physical therapy literature, but it entails how health care professionals care for their clients in a professional way and involves a combination of competence, caring, communication, and connection. Good communication and connection between the physical therapist and the person with OA may increase adherence to exercise and thereby improve the results of the exercises.

Many of the participants stated that their physicians had not emphasized the importance of exercising. However, this is one of the 3 key factors addressed in the new clinical guidelines from the National Health Service to physicians concerning the treatment of people with OA. These factors are: (1) education, both for patients and their families; (2) exercises, both strengthening and endurance training; and (3) weight control, if necessary. It is important to bear in mind, however, that some studies have indicated that people tend to underestimate if or how the matter of exercise is discussed in their appointments with rheumatologists.

Our study indicates that weather is important and can be either a facilitator or a barrier to exercise and outdoor activities. The effects of weather on how people with OA feel has been questioned, and the results of one study indicated that the weather does affect the general well-being of people with OA. Our participants complained about the lack of information about what exercise programs were available, and for whom. According to our participants, it is vital to provide sufficient and accessible information on exercise classes, make sure facilities are accessible and user-friendly, and encourage local authorities to provide benches along neighborhood walking paths.

Clinical Implications and Future Research
The results of this study include extended information on facilitators and barriers concerning exercise behavior among people with OA. The checklist presented in Figure 3 might serve as a practical tool in physical therapists’ assessment of facilitators and barriers to exercise and subsequent interventions. A person with OA who has strong personal characteristics, such as strong self-efficacy and motivation, along with adaptability and initiative, may be able to maintain a regular exercise routine, despite limiting external factors. If, however, the internal factors, such as self-efficacy, motivation, and health beliefs, are weak, the importance of the external factors is increased. This information should be studied further, as it might be a foundation for a standardized instrument to assess which influential factors are strong and which factors need to be worked on to facilitate exercising by people with OA. Future studies might explore whether internal factors (individual attributes and personal experience) are indeed moderating variables that cause individuals to interpret external factors (social and physical environment) as facilitators or barriers to exercise.

Conclusion
The theoretical model and practical checklist on facilitators and barriers to exercising can be of value for physical therapists working in health promotion among people with OA, as well as in other areas of clinical work and in physical therapy education, research, and administration. The results indicate that motivation, adaptability, and other internal and external factors have a major impact on whether exercise is included in the lifestyle of people with OA. The question is not whether to exercise but how, how much, and under what circumstances, and the patients themselves, if able to commu-
nicate well, can help to determine what exercises and what level of participation are effective. Increased knowledge and understanding of the factors influencing exercise behavior in people with OA can help physical therapists and other health care professionals support them in initiating and maintaining a healthy exercise routine and, consequently, achieving a better quality of life.

All authors provided concept/idea/research design, writing, data analysis, and consultation (including review of manuscript before submission). Mrs Petursdottir provided data collection, participants, and facilities/equipment. Mrs Arnadottir provided project management. Mrs Arnadottir and Dr Halldorsdottir provided institutional liaisons.

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