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## PHYSIOLOGY & REHABILITATION | SHORT COMMUNICATION

# Osteoarthritis and fear of physical activity—The effect of patient education

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**Abstract:** *Purpose:* The aim of the current study was twofold. The first aim was to investigate, from the aspects of gender, age and Body Mass Index, the prevalence of fear among individuals with osteoarthritis that their joints would be harmed if they performed physical activity. The second aim was to determine if a patient education programme might lessen this fear. *Method:* A total of 100 participants were enrolled in a randomised controlled study and completed measures on two occasions over the course of six months. The participants were randomised to either an intervention group or to a control group. *Results:* More than a quarter of the participants feared that their joints would be harmed if they performed physical activity. This was reported by significantly more men than women. Age and Body Mass Index did not seem to have any significant impact on the fear. The patient education programme for osteoarthritis reduced fear significantly ( $p = 0.010$ ). *Conclusions:* A patient education programme appear to be one way of reducing the fear among individuals with osteoarthritis, that the joints would be harmed by physical activity.

**Subjects:** Health Conditions; Aging and Health; Population Health; Preventative Medicine; Sports Medicine; Primary Health Care & Family Practice

**Keywords:** fear; intervention; patient education programme; osteoarthritis; physical activity; physiotherapy; randomized controlled trial

### 1. Introduction

Osteoarthritis (OA) is considered one of the major public health problems in the world today (Somers et al., 2009). It most often affects joints in the fingers, hips, knees and spine, and the symptoms, which include pain and stiffness, have an impact on quality of life and the activities of daily living. OA

### ABOUT THE AUTHORS

This study is a part of a thesis that aimed to investigate how different life-change events may affect participation in physical activity. The thesis concluded that a greater understanding of the context in which different life-change events occur as well as the different risks for women and men will facilitate the promotion of physical activity at different life-change events. The data in this study is from a larger study that aimed to evaluate the effects of a patient education programme for patients with osteoarthritis in primary health care in terms of self-efficacy, function and self-perceived health.

### PUBLIC INTEREST STATEMENT

Osteoarthritis is one of the major public health problems in the world and should be treated with physical activity (PA). Research concerning fear among individuals with osteoarthritis is limited, even it is known that many avoid PA due to fear of destroying their joints. The findings from this study showed that more than a quarter of the participants had fear that their joints would be harmed by PA. However, a patient education programme, where the participants got information about e.g. PA, physiology of pain as well as coping with pain, reduced fear significantly. The study also showed that a majority of the participants had a Body Mass Index 25 or more. Interventions to promote PA is important among these individuals, both to reduce fear as well as to lose weight.

is twice as common among women than men and is also strongly associated with advancing age and being overweight (The Centers for Disease Control and Prevention and the Arthritis Foundation, 2010). Given that both the elderly population and the percentage of the population who are overweighted are growing steadily, managing OA in the best way possible is the top priority (Heuts et al., 2004; The Centers for Disease Control and Prevention and the Arthritis Foundation, 2010). The cause of OA is not known, and there is no cure; as a result, treatment is directed towards reducing symptoms (Das & Farooqi, 2008). Patient education programmes for OA have been shown to positively affect both function and health among individuals with OA and is today, coupled with weight loss and physical activity (PA) directed to the majority of all individuals with OA as a core treatment (Conaghan, Dickson, & Grant, 2008; Ekvall Hansson et al., 2010).

According to current international guidelines, all forms of OA should be treated with PA aiming to enhance muscle strength around the affected joints (Rosemann et al., 2006). However, the majority of individuals with OA are not physically active, and many avoid PA due to the fear of pain and the fear that PA will damage their joints (Heuts et al., 2004). Thus, from a public health perspective, it is important to not only promote PA but also determine what may hinder individuals with OA from performing PA, as previous research regarding fear in connection with PA is limited. The aim of this study was twofold: The first aim was to investigate, from the aspects of gender, age and Body Mass Index, the prevalence of fear among individuals with osteoarthritis that their joints would be harmed if they performed physical activity. The second aim was to determine if patient education programme might lessen this fear.

## 2. Materials and methods

The participants in this study were referred by their general practitioner, orthopaedic specialist, physiotherapist or occupational therapist to the patient education programme for osteoarthritis (PEPOA) in Primary Health Care in Malmö, Sweden, during October 2007–2008. As other patient education programmes, PEPOA involved planned learning experience to influence a patient's knowledge and health behavior. Education can be given by a physician as part of a consultation, in small groups or delivered by multidisciplinary team (Schrieber & Colley, 2004). Since 1994, Primary Health Care in Malmö has used a patient education programme directed towards OA. The programme has been developed by physiotherapists and occupational therapists in primary health care. The inclusion criteria for this study were individuals of all ages with OA in the knee, hip or hand and with pain, stiffness and limitation of movement in the affected joint. The exclusion criterion was the inability to speak and understand Swedish. This study was a *post hoc* retrospective analysis of a prospective, randomised controlled trial that aimed to evaluate the effects of the PEPOA programme. For a more detailed description of the complete design and structure of the study, see Ekvall Hansson et al. (2010).

At the first meeting of PEPOA, the participants completed a questionnaire with questions about what PA they participated in (as an open question) and how often. The “how often” question were graded on a three-point scale, with three alternatives: participation in PA more than two times per week to every day; participation in PA one to two times per week; and no participation at all in PA. They were also asked to give their height and weight, and answer whether they had any fear that their joints would be harmed by PA. The participants were randomised to either an intervention group or a control group by an independent person by using a random number list and sealed envelopes. The intervention group participated in PEPOA, which consisted of five group sessions. Each session lasted three hours and was held once a week for five weeks. The sessions focused on self-efficacy and included information about topics such as anatomy, the physiology of pain and coping with pain, PA, medications, a healthy diet and ergonomics. Eight to ten participants concurrently participated in the programme, and all completed the programme. Meanwhile, the control group continued living as usual. After six months, all the participants were asked again (by a questionnaire) if they had any fear that their joints would be harmed by PA. In the statistical analyses, a  $\chi^2$  test was used to compare proportions between groups. SPSS version 23.0 was used for the analysis. The study was approved by the Regional Ethical Review Board in Lund (No. LU 580-02). All participants gave their informed consent to participate in the study.

**Table 1. Demographic characteristics**

	Women (n = 83*) (%)	Men (n = 17*) (%)	p-value	CI (95%)	Age <65 (n = 62*) (%)	Age >65 (n = 38*) (%)	p-value	CI (95%)	BMI <25 (n = 31*) (%)	BMI >25 (n = 69*) (%)	p-value	CI (95%)
Participants that had fear that the joints would be harmed by PA—baseline	18 (12)	9 (53)	0.011	1.380–12.237	16 (26)	11 (31)	0.673	0.479–3.127	7 (23)	20 (29)	0.518	0.502–3.924

\*Number participating.

**Table 2. Participants that had fear that the joints would be harmed by physical activity—baseline and after six months**

Participants that had fear that the joints would be harmed by physical activity—baseline	Intervention (n = 51*) (%)	Control (n = 49*) (%)	p-value	CI (95%)
	13 (25)	14 (29)	0.066	0.016–1.141
Participants that had fear that the joints would be harmed by physical activity—after six months	5 (9)	13 (27)	0.010	2.043–211.792

\*Number participating.

### 3. Results

A total of 100 individuals took part in the study: 83 women and 17 men. They were between the ages 41 and 84 years and the mean age being 63 years. It was reported that 39% (39/100) had a higher education, meaning the completion of a university degree, and 13% (13/100) smoked regularly. Also, 45% (45/100) performed PA regularly (more than two times per week to every day) and among those, walking was the most common activity reported (n = 33), followed by biking (n = 7). It was also found that 68% (68/100) had a Body Mass Index (BMI) of 25 or more. As seen in Table 1, significantly more men than women had the fear that their joints would be harmed by PA, however age and BMI did not seem to have any significant impact on fear.

The intervention group consisted of 51 participants and the control group had 49 participants. At baseline, a total of 27% (27/100) of the participants feared that their joints would be harmed by PA, and no significant differences were seen between the two groups. After six months, a significant decline (p = 0.010) between the intervention group and the control group was observed, as shown in Table 2.

### 4. Discussion

Our findings showed that more than a quarter of the participants had the fear that their joints would be harmed by PA, with men having reported this fear significantly more than women. Education programmes for individuals with OA were shown to reduce fear since at the follow up, significantly (p = 0.010) fewer participants in the intervention group had the fear that their joints would be harmed by PA compared with the control group. Of the participants, 68% had a BMI of 25 or more, however despite this, the participants' BMI appeared to have no significant impact on the fear.

Women suffer from OA more than men and should be regarded as an important group to focus on when promoting PA. Previous studies have found that there are gender differences in the prevalence and severity of knee OA, but therapeutic approaches to the treatment have not yet taken this aspect into consideration (Boyan et al., 2013; The Centers for Disease Control and Prevention and the Arthritis Foundation, 2010). Our findings, that men with OA feared that their joints would be harmed by PA more than women with OA, support the need for more research in what role gender and sex

plays in optimally managing OA. In addition, 68% of the participants in this study were found to have a BMI of 25 or more, which further highlights the needs for interventions that also promote PA in conjunction with weight loss.

As no curative treatments for OA exist (Das & Farooqi, 2008), it is important to support those who suffer from OA with sustainable strategies to cope with this life-long disease. Although OA is considered to be one of the major public health problems in the world (Somers et al., 2009) it remains a relatively unaddressed public health issue. It is important to optimise the core treatment of OA, taking into consideration certain individual factors and preferences will lead to the more effective use of resources and the best possible care. By developing a better understanding of the relationship between PA and OA, individuals who are at a greater risk can be appropriately targeted for tailored health interventions aimed at relieving symptoms and improving function. Knowledge about the hindrances to PA, such as fear, as well as the facilitators of PA can provide communities and the health care sector with the opportunity to increase the likelihood that individuals with OA will participate in PA. A patient education programme appear to be one way to reduce the fear that the joints will be harmed by PA among individuals with OA.

Some limitations of this study warrant consideration. Given that the study sample was small ( $n = 100$ ) and that the majority of the participants were women (83/100) any generalisations must be made with caution. Further, the information about height and weight was given by the participants. Since weight is one of the factors that people tend to underestimate, it is possible that this also could be the case in this study. Nevertheless, more than one third of the participants were overweight and a further third were obese. The participants' participation in PA was self-reported and thus prone to misclassification; also, only the frequency of PA was measured, not intensity or duration. Our study followed up PEPOA:s effect on the fear to participate in PA and not the effect the actual performance on PA. However, an assumption might be that with less fear, increased PA will follow. Moreover, the participants in the intervention group had the opportunity to socialise with others who had similar problems, which also may have affected their fear positively. The current method has not been tested against widely-used scales for measuring fear, such as the Fear Avoidance Beliefs Questionnaire, which might had offered a more in-depth and reliable assessment and thus, this study is limited in what it can add to the general body of knowledge. However, as research concerning fear among individuals with OA is limited, this study contributes with new information and shows the need for more research.

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#### Competing Interests

The authors declare no competing interest.

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#### References

- Boyan, B. D., Tosi, L. L., Coutts, R. D., Enoka, R. M., Hart, D. A., Nicoletta, D., ... Kohrt, W. M. (2013). Addressing the gaps: Sex differences in osteoarthritis of the knee. *Biology of Sex Differences*, 4, 4. <https://doi.org/10.1186/2042-6410-4-4>
- Conaghan, P. G., Dickson, J., & Grant, R. L. (2008). Care and management of osteoarthritis in adults: Summary of NICE guidance. *British Medical Journal*, 336, 502–503. <https://doi.org/10.1136/bmj.39490.608009.AD>
- Das, S. K., & Farooqi, A. (2008). Osteoarthritis. *Best Practice & Research Clinical Rheumatology*, 22, 657–675. <https://doi.org/10.1016/j.berh.2008.07.002>
- Ekvall Hansson, E., Jönsson-Lundgren M., Ronnheden A.-M. Sörensson, E., Bjärnung, Å., & Dahlberg, L. E. (2010) Effect of an education programme for patients with osteoarthritis in primary care – a randomized controlled trial. *BMC Musculoskeletal Disorders*, 11, 288. <https://doi.org/10.1186/1471-2474-11-244>
- Heuts, P. H. T. G., Vlaeyen, J. W. S., Roelofs, J., de Bie, R. A., Aretz, K., van Weel, C., & van Schayck, O. C. (2004). Pain-related fear and daily functioning in patients with osteoarthritis. *Pain*, 110, 228–235. <https://doi.org/10.1016/j.pain.2004.03.035>
- Rosemann, T., Wensing, M., Joest, K., Backenstrass, M., Mahler, C., & Szecsenyi, J. (2006). Problems and needs for improving primary care of osteoarthritis patients: the views of patients, general practitioners and practice

- nurses. *BMC Musculoskeletal Disorders*, 7, 646.  
<https://doi.org/10.1186/1471-2474-7-48>
- Schrieber, L., & Colley, M. (2004). Patient education. *Best Practice & Research Clinical Rheumatology*, 18, 465–476.  
<https://doi.org/10.1016/j.berh.2004.03.008>
- Somers, T. J., Keefe, F. J., Pells, J. J., Dixon, K. E. Waters, S. J. Riordan, P. A., ... Schmitt, D. (2009). Pain catastrophizing and pain-related fear in osteoarthritis patients: Relationships to pain and disability. *Journal of Pain and Symptom Management*, 37, 863–872.  
<https://doi.org/10.1016/j.jpainsymman.2008.05.009>
- The Centers for Disease Control and Prevention and the Arthritis Foundation. (2010). *A national public health agenda for osteoarthritis*. Retrieved September 16, 2016, from <http://www.cdc.gov/arthritis/docs/OAagenda.pdf>



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