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Title:

Physical activity for chronic back pain: qualitative interviews among patients and GPs

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Physical activity for chronic back pain: qualitative interviews among patients and GPs

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Abstract

Background: Chronic back pain (CBP) is common among patients in primary care and is associated with significant personal and socioeconomic burden. Research has shown that physical activity (PA) is one of the most effective therapies to reduce pain. However, for general practitioners (GP) it remains challenging to advise and encourage individuals with CBP to exercise regularly.

Aim: To provide insight into views and experience on PA in individuals with CBP and GPs. To reveal facilitators and barriers for engaging in PA.

Design and Setting: Qualitative semi-structured interviews with 14 individuals with CBP and 12 GPs in Germany between June and December 2021.

Method: Interviews were coded separately by consensus and analysed thematically. Findings of the two groups were compared and summarised.

Results: Opinion and experience on PA in individuals with CBP were similar both within and across the GP and patient groups. Interviewees expressed their views on internal and external barriers affecting PA. They provided strategies to address these barriers and concrete recommendations to increase PA. However, our study revealed a conflictual doctor-patient-relationship that ranged from paternalistic to partnership-based to service provision. This might lead to negative perceptions on both sides such as frustration and stigma.

Conclusion: To the best of our knowledge, this is the first qualitative study exploring opinion and experience of PA in individuals with CBD and GPs in parallel. Our study reveals a complex doctor-patient-relationship and provides an important insight into motivation for and adherence to PA in individuals with CBP.

Keywords: primary health care, back pain, exercise, physician-patient-relations, qualitative research, treatment adherence and compliance

1 **How this fits in**

2 PA is one of the most effective therapies for chronic back pain. However, it remains challenging to
3 advise and encourage individuals with chronic pain to exercise regularly. Yet, quantitative and
4 qualitative research has mainly focused on patients' and doctors' perspectives separately without
5 taking into consideration its relationship. This study reveals perceptions, barriers and motivators of
6 PA in the treatment of CBP and the influence of patient-GP conversations around PA on the doctor-
7 patient-relationship.

8

9 **Introduction**

10

11 Chronic back pain (CBP) is common in patients in primary care and is associated with significant
12 personal and socioeconomic burden. It is one of the leading causes contributing to disability
13 worldwide ¹ and results in enormous direct healthcare and lost productivity costs ^{2,3}.

14 There is a robust body of evidence showing that various types of physical activity (PA) lead to an
15 improvement of back pain ^{2,4} and numerous clinical guidelines recommend PA as the primary
16 treatment for CBP ⁵⁻⁷. However, adherence to any health intervention is difficult, even more in
17 individuals with chronic conditions ⁸. In this context, Caspersen et al. defined PA as any bodily
18 movement which results in energy expenditure, and exercise as a planned, structured and repetitive
19 subset of PA to improve physical fitness ⁹. In the general population PA is insufficient: one in two
20 women and one-third of men in England do not achieve the targets of the UK guidelines on PA ^{10,11}.
21 Individuals with CBP have insufficient levels of PA independent of their pain-related disability ^{12,13}.
22 Poor adherence to PA recommendations limits its potential long-term effectiveness. Studies have
23 explored various strategies (including goal setting, use of self-monitoring techniques) to improve
24 adherence to PA ¹⁴. However, research has shown that adherence is influenced by several
25 interdependent factors, such as patients' characteristics and clinical setting, and even fluctuates over
26 time ^{15,16}.

27 Qualitative studies showed the importance of role and the impact of health professionals in
28 promoting PA in patients with CBP and GPs see it as their duty to promote PA ^{17,18}. Current
29 approaches for promoting PA in primary care are ineffective ¹⁴. Therefore, the aim of our qualitative
30 study was to explore how, in their own and the GP's perspective, patients could be supported to
31 increase PA levels as part of their CBP therapy. Objectives were to understand barriers and
32 facilitators of PA and maintaining higher levels of PA.

33

34 **Method**

35 **Study Design**

36 A semi-structured interview study was conducted to explore views and experience of PA for CBP in
37 individuals with CBP and GPs. Our aim was to explore how patients could be supported to increase
38 PA levels as part of their CBP therapy. Based on these findings, we plan to develop an intervention
39 (digital consultation tool) to increase PA in patients with CBP. We chose this approach to reveal
40 barriers and facilitators to PA for patients with CBP managed in primary care.

1 The study was approved by the Institutional Review Board of the University of Marburg (ethics
2 approval ID: 79/21). After explanation of nature and possible consequences of the study, informed
3 written consent was obtained from all subjects. The protocol followed the tenets of the Declaration
4 of Helsinki ¹⁹.

5 Members of a patient advisory board supported all project phases (e.g. development of topic guide)
6 and a physiotherapist supported the analysis.

7 The research team (NL, NK, JH, VvdW, AV) is multidisciplinary (medicine, psychology, biology) and all
8 members have experience in qualitative research. Three researchers are GPs (NL, NK, AV). All
9 researchers reflected on their personal experience of PA and, where relevant, their experience of
10 working as a GP. The study process underwent an internal peer review by the entire working group
11 and an external peer review through the presentation at the German GP Congress.

12

13 **Sample**

14 The interview study was performed on two different groups (1) GPs and (2) individuals with CBP. GPs
15 and patients were recruited via the local research practice network ("Famprax") in the state of
16 Hessen (Germany). Inclusion criteria were that GPs were currently practising and presence of a
17 computer in the consulting room. Inclusion criteria for patients were CBP, a minimum of three
18 contacts with the GP because of CBP in the last six months and age > 18 years. Exclusion criterion
19 was severe cognitive impairment. Participants of different (socioeconomic) backgrounds, ethnicities,
20 age and from rural and urban settings were recruited via purposive sampling. Initially, patients were
21 recruited by their known individual GP. To search for divergent data, the recruitment was extended
22 beyond the research practices after performing the first interviews: Additionally, we advertised the
23 study in practices and supermarkets using posters. Potential participants contacted us via
24 mail/telephone and were provided with written and verbal information on the study. After no new
25 themes emerged and sufficient data had been collected to answer the study question, recruitment
26 was terminated.

27

28 **Data Collection**

29 Two semi-structured interview guides (table 1) were developed by the study group after an extensive
30 literature review in order to explore views on and experience with PA in individuals with CBP and
31 GPs. Those interview guides were tailored after feedback of the patient advisory board and after
32 performing the first interviews. In addition, we discussed the first results within the study group to
33 tailor the interview guides. An overview of main topics and corresponding sample questions are
34 presented in Table 1. Demographic data was collected using a questionnaire.

35 NL and NK conducted interviews between June and December 2021. Due to COVID restrictions, a
36 combination of in-person, telephone and video interviews was performed. We conducted patient
37 interviews at their homes and GP interviews at their practices. All interviews and analyses were held
38 in German as all participants could speak and understand German.

39

40

interview guide for patients	interview guide for GPs
patients prior clinical and personal history <i>Firstly, I would be interested in knowing for how long you have been experiencing back pain.</i>	experience on conversation on PA with CBP-patients <i>Firstly, I am interested in your experiences in to what extent PA and exercise is a subject when you are consulting patients with chronic back pain.</i>
previous consultation with GP <i>Could you think back to the situation in which you last talked to your doctor about your back pain? What did you talk about?</i>	challenges in advising CBP-patients on PA <i>Which challenges do you face in counselling patients with back pain towards more physical activity?</i>
previous therapy and its impact on pain <i>What do you do to treat your pain?</i>	support of patients with CBP in physical activity in general <i>In your opinion, how could patients be supported to become more physically active?</i>
feelings on rest to treat back pain <i>"You must rest a hurting back." What do you think about this statement?</i>	support of patients with CBP in physical activity in primary care <i>How can you help the patients as their doctor?</i>
feelings on PA <i>Research says that movement is good against chronic pain. What do you think about that?</i>	views on visualisation of impact of PA on pain <i>In our project we tried finding a good way to visualize the change of pain. We would love to hear your opinion on the different possibilities we have come up with.</i>
motivators and barriers to regular physical activity <i>What do you need to exercise more?</i>	
views on visualisation of impact of PA on pain <i>In our project we tried finding a good way to visualise the change of pain. We would love to hear your opinion on the different possibilities we have come up with.</i>	

1 *Table 1 Overview of main topics and corresponding sample questions discussed in the interviews. We used two different*
2 *interview guides for patients and GPs. The interview guide was tailored after having performed the first interviews and*
3 *discussion of the first results with the whole study group.*

4

5 **Data Analysis**

6 Interviews were audio-recorded and transcribed verbatim. Quotes were translated into English by SN
7 for publication. Transcripts and translated quotes were double-checked by NL and NK. Additionally,
8 field notes were taken. Data was anonymised and all participants received pseudonyms (fictitious
9 names according to the recommendation on pseudonymisation ²⁰). Data were managed in MAXQDA
10 2022 (VERBI Software, Berlin, Germany) and coded by consensus by NL and NK following the method

1 of Braun and Clarke using a deductive- inductive approach with interview questions supporting
2 theme development (deductive) but participants' answers allowing new themes to emerge
3 (inductive) ^{21, 22}. In a first step, the researchers familiarised themselves with the interviews by
4 listening to the audio files of the interviews, reading the transcripts and adding comments. In the
5 next step, text passages that could be relevant to the research question were identified and codes
6 were assigned to them. In the third step, these codes were grouped into superordinate themes that
7 were clearly distinguishable from each other and could be substantiated by codes. The final coding
8 frame was reviewed by JH in a sample of four interviews. Emerging themes were discussed with the
9 study group and initially, separate thematic maps were created with FreeMind 1.0.1 (GNU GPL V2+)
10 for patients' and doctors' interviews (Supplementary Figure 1). After further analysis of results within
11 the study group, we optimised thematic maps in an iterative process. We compared themes amongst
12 doctor and patient interviews with each other.

13

14 Results

15 A total of 14 patients (9 women and 5 men) and 12 GPs (5 women and 7 men) were interviewed.
16 Most of the interviews were completed via telephone (telephone: 17, personal: 5, video-conference:
17 4). Interviews lasted between 15 and 52 minutes. Age of patients ranged from 30 to 68 years, that of
18 GPs from 31 to 62 years. Characteristics of interview partners are presented in Table 2. Two patients
19 who initially agreed to participate could not be interviewed because of failure to reach them again. In
20 one interview, recording failed and we used detailed notes for coding.

21

22

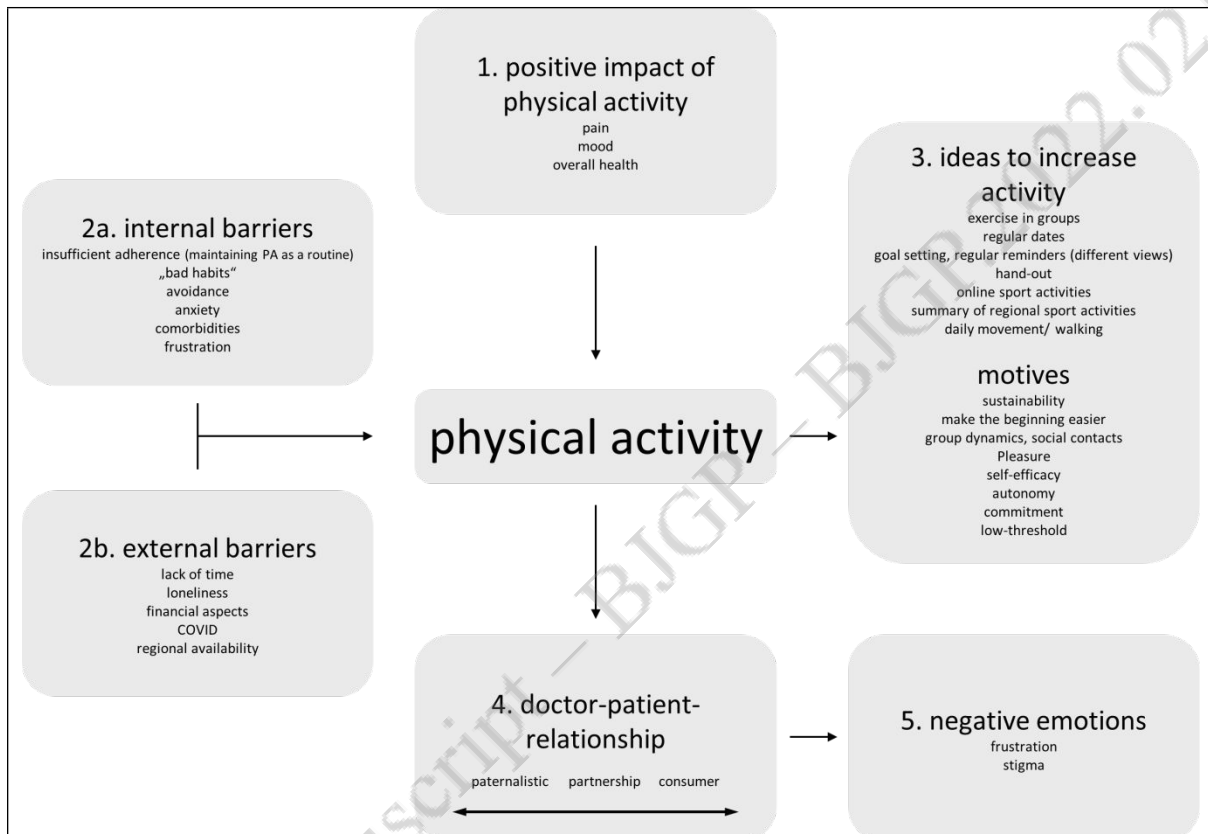
GP	age	working as GP	setting	patient	age	physical activity in daily life	frequency of GP consultation ¹	mean pain ²
Anke	45 years	6-15 years	rural	Inge	65 years	intermediate	1-4 times per year	7
Hannah	35 years	less than 5 years	rural	Christian	59 years	intermediate	1-4 times per year	4
Riccardo	62 years	more than 15 years	rural	Cordula	47 years	high	5-12 times per year	3.5
Melanie	61 years	more than 15 years	urban	Anastasia	ng	ng	ng	ng
Rolf	53 years	more than 15 years	rural	Dmytro	42 years	high	1-4 times per year	5.5
Matthias	ng	ng	rural	Barbara	58 years	low	more than 12 times per year	6.5
Karl	60 years	6-15 years	rural	Anna	42 years	high	more than 12 times per year	7
Felix	46 years	6-15 years	urban	Harald	30 years	high	5-12 times per year	8.5
Lukas	42 years	ng	urban	Birgitt	51 years	high	1-4 times per year	4.5
Lena	42 years	less than 5 years	urban	Susanne	68 years	intermediate	5-12 times per year	8
Carla	31 years	less than 5 years	urban	Hans	44 years	high	5-12 times per year	7
				Jana	46 years	intermediate	5-12 times per year	5
				Louisa	39 years	intermediate	1-4 times per year	3.5
				Karsten	68 years	low	1-4 times per year	2

Table 2 Characteristics of interview partners. Detailed data for one patient is missing. (ng: not given, all participants received pseudonyms (fictitious names according to the recommendation on pseudonymisation ²⁰), 1: consultations for chronic back pain, 2: assessed with a visual analogue numerical rating scale by asking "Indicate the severity of your pain below. Please tick on the scale below how much pain you feel on average.").

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1 The following themes emerged in the GP and patients groups: (1) positive attitude towards PA with
 2 regard to pain, (2a) internal and (2b) external barriers affecting PA, (3) different features and
 3 qualities of supporting strategies and concrete ideas to increase adherence to PA, (4) influence on
 4 doctor-patient-relationship and (5) negative emotions on the side of GPs and patients. Figure 1
 5 provides an overview of important factors influencing PA. Interestingly, themes, which arose in the
 6 interviews, were similar within each group. Beyond that, the themes were nearly identical between
 7 the GP and patients groups.

8



9 *Figure 1 Overview of factors influencing physical activity as expressed by patients and GPs: Themes were nearly identical in*
 10 *the GPs' and patients' groups. Interview partners expressed a (1) positive impact of physical activity on pain, (2) internal and*
 11 *external barriers leading to inactivity, (3) ideas to increase physical activity and motives for recommending them. (4) Doctor-*
 12 *patient-relationship was a source of conflict as implemented model ranged from paternalistic over partnership-based to*
 13 *consumer model. This led to (5) negative emotions on the side of GPs and patients.*

14

15 Positive impact of PA on pain

16 In general, both doctors and patients viewed PA as positive for people with CBP, not only to reduce
 17 pain but also to improve mood and overall health. Especially positive impact of outdoors PA was
 18 emphasized by interview partners: “Even outside of work, I try to stay in motion and walk as much as
 19 possible. I’m aware that it’s really good for my back.” (Birgitt), “Or “forest bathing” is quite new and
 20 popular at the moment. I let them know that simply going for a 30-minute walk on some soft forest
 21 floor is also good for your back.” (GP Rolf) (Forest bathing: Relaxation and walking in the forest,
 22 combined with a conscious perception of nature.)

1 Negative effects of PA in terms of increase of pain when performing unsuitable PA were rarely
2 verbalised by patients but did occur: *"I went to a "Tae Bo" session once and I had pain. Jumping lots
3 wasn't that great for the back."* (Louisa) (Tae Bo: an exercise system combining elements of aerobics
4 and kickboxing)

5

6 **Barriers affecting participation in PA**

7 Interview partners reported barriers affecting participation in regular PA. Those could be categorised
8 into internal causes and external causes. A complete overview of barriers with corresponding
9 interview passages can be seen in Supplementary Table 2. Especially important were the sub-themes
10 maintaining PA as a routine, "bad habits", listlessness/psychosomatics, regional availability, COVID-
11 restrictions and lack of time.

12

13 **Internal barriers**

14 Many physicians and patients saw insufficient long-term adherence, in the sense of maintaining PA
15 as a routine, as main barrier. This was regarded as especially challenging in times when pain has
16 already improved: *"On days free of pain, I often forget it [exercises]"*. (Birgitt) PA becomes a
17 secondary focus in daily life: *"most of the time it [PA] gets lost in the daily routine"* (Harald). This
18 seems to be the case particularly after an interruption of PA: *"... then when there is a longer break
19 again. Then it's out of sight, out of mind again"* (Barbara).

20 Interviewed GPs highlighted specific characteristics of individuals as difficult in motivation for PA
21 ("bad habits"): *"There are those couch potatoes that won't do much. They will tell me "Yeah, I work
22 out, by going to the washing machine twice a day. Not much left to do there."* (GP Melanie)

23 Furthermore, GPs saw listlessness and psychosomatic aspects as an internal barrier: *"... people are
24 lacking drive, which in turn makes getting them off their sofas harder.... Sometimes there's also
25 something like a depressive component"* (GP Anke)

26 Some Patients expressed to feel stigmatised and frustrated: *"I would like to have more support and
27 conversations because it's a real ordeal. It's like I am being treated like I was faking my ailments. I
28 feel helpless when I'm not taken seriously enough."* (Anna)

29 Few patients described anxiety and avoidance behaviour: *"I was scared after having surgery on my
30 knee ... it's like you're walking and a voice in your head tells you to walk slower and be more cautious.
31 Slow down. That's still in my head."* (Anastasia)

32 GPs also saw secondary disease gain as a cause of reduced activity and worsening pain: *"You can try
33 doing whatever you want; it usually only gets worse. The pain increases because there's a certain
34 desire to retire or receive disability benefits."* (GP Karl)

35 Both patients and GPs reported difficulties due to comorbidities: *"It of course gets a whole lot more
36 difficult with motivation when they have knee arthrosis or similar, like an additional comorbidity that
37 restricts their movement."* (GP Lena)

38

39 **External barriers**

1 Insufficient regional availability was one major external barrier in recruiting patients for PA: *“There*
2 *are plenty of possibilities to get exercise e.g. water gymnastics. But all of the programs are usually*
3 *overloaded and it’s really, really difficult to get in.” (Anna)*

4 Patients and GPs described COVID restrictions as a factor that aggravated this situation: *“I’ve already*
5 *been to back school but then corona broke out. Everything was shut down and closed again.” (Hans)*

6 Another important limitation to perform regular PA was lack of time of patients (e.g. due to work and
7 personal circumstances): *“Work takes up most of my life; I live in two different cities.” (Christian).*

8 Some patients reported that loneliness prevented them from PA: *“I’ve given up on having my*
9 *husband join me on walks. ...I get the feeling that he doesn’t want any company; just wants some*
10 *alone time.” (Susanne)*

11 Some of the GPs stated that they do not have enough time in the practice routine for advise on PA:
12 *“The thing with giving counselling and recommendations is that I honestly feel like I’m working in a*
13 *disaster area ... it’s always like I’m playing Blitz chess for the entire day ... I really don’t have the time*
14 *left to explain anything to anyone.” (GP Lukas).*

15 Some of the GPs said that they do not feel confident about advising patients on PA: *“The only thing*
16 *we usually demonstrate is the “step bed storage” [lying position to relax back] ... I don’t even know*
17 *what I’m supposed to show them.” (GP Anke)*

18

19 **Strategies and ideas to increase long-term maintenance of PA**

20 Beyond barriers that influence PA, a theme of the doctor and patient interviews was how behaviour
21 change towards more PA could be achieved. In this context, interview partners emphasised different
22 strategies to increase long-term maintenance of PA. The theme strategies to increase PA included
23 the sub-themes: sustainability, enjoyment, easy start, group dynamics/social contacts, commitment,
24 low-threshold, autonomy and self-efficacy.

25 First, effective methods to motivate individuals with CBP should support patients to maintain
26 sufficient levels of PA: *“Yeah, an app is a good idea, that gives you an impulse over and over ... In a*
27 *way that my alarm also tells me “you have to get up now”, the app would ask me “have you done*
28 *your back exercises today already?” (Christian)*

29

30 Among strategies to increase PA, enjoyment was a central sub-theme for both patients and GPs: *“At*
31 *the end of the day, it’s all about conveying that there’s fun in movement. Easy as that.” (Christian)*

32

33 Moreover, according to patients and GPs PA should be easy to carry out: *“I mainly recommend going*
34 *for walks because I don’t think it’s overstraining. Even if you’re not athletic and don’t do sports, it still*
35 *does a good job.” (GP Lena)*

36

37 Interview partners mentioned several concrete ideas to increase PA. Figure 2 provides an overview of
38 those.

1 For many interview partners performing PA in groups, namely in the form of exercise groups or
2 individual meetings, was considered helpful: *"It's definitely easier for me when I have company. Let's
3 look at Nordic walking for example. I do that twice a week but never go by myself ... and
4 rehabilitation sport is a group sport by default, which is really, really great."* (Barbara)

5

6 Furthermore, the possibility to provide a summary of regional sports activities was stated as useful to
7 advise patients: *"I would appreciate more precise recommendations on sports programs from my
8 doctors. ... Just specific things I could do, that aren't far from my home instead of "you could try this
9 or that sport".* (Louisa)

10

11 Such a summary could be part of a handout or presented in a digital consultation tool, which were
12 both considered advantageous: *"a website would make a lot of sense where you could download
13 targeted content where you could then say, "Look, I would recommend doing this here in your case.""*
14 *(GP Melanie), "In my conversations, a handout would make the most sense to show something to my
15 patient."* (GP Matthias) Some GPs pointed out that specific exercise instructions that they can give to
16 their patients would be helpful: *"So what would actually make it easier is if you had a list or a plan
17 with things that you could specifically advise people about, that you could maybe give them ... That
18 there are concrete recommendations."* (GP Hannah")

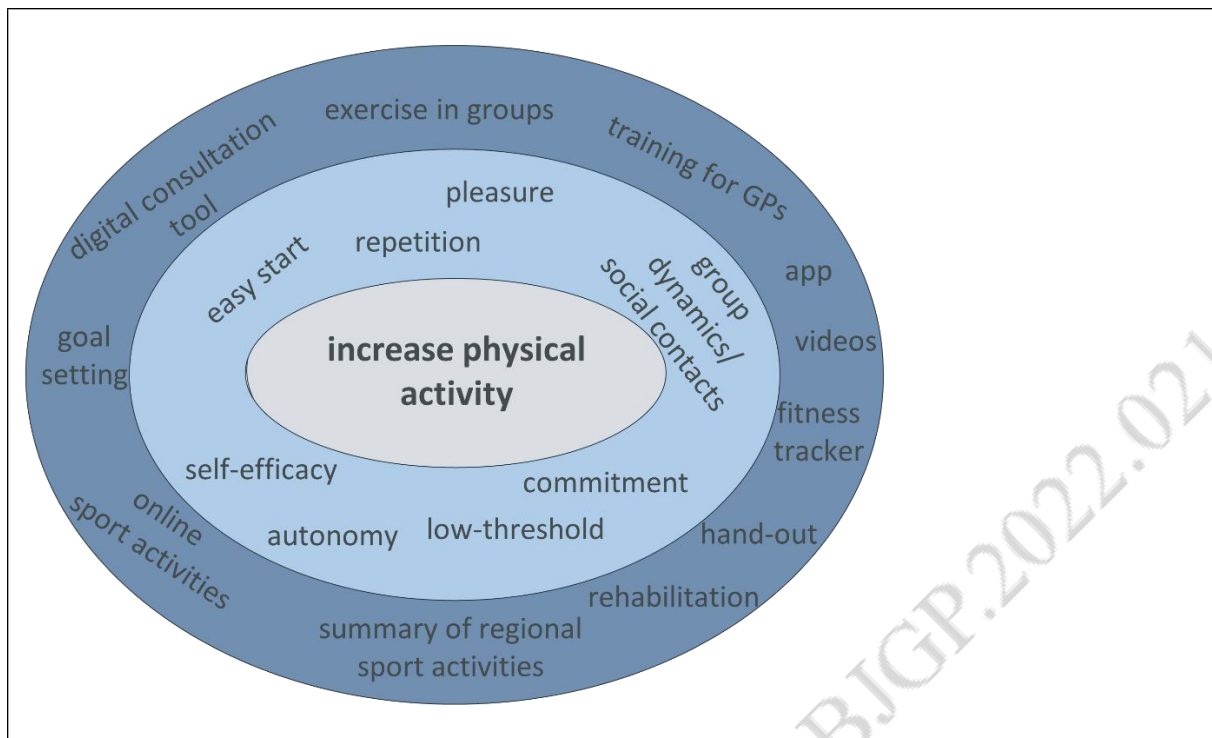
19

20 Interestingly, opinion on goal setting and regular reminders (e.g. in form of an app) was
21 controversial: *"I am careful not to be too controlling because I have no way of knowing how much
22 truth there is to a patient's answer."* (GP Riccardo), *"For me personally it would be good [goal
23 setting]. Other people might feel too controlled, restricted or whatever. For me personally, it would
24 have been good especially to upkeep motivation when I'm just getting started."* (Louisa)

25

26 We asked interview partners on their views on different options of visualisation of pain. We were
27 particularly interested in whether a certain form of visualisation was perceived as motivating. Views
28 were diverse. Some preferred a simple visual analogue scale and even thought not to feel taken
29 seriously when looking at a scale with smileys. On the other hand, others expressed advantages of a
30 scale with smileys (e.g. easy to understand, nice to look at and inviting).

31



1 *Figure 2: Overview of motives (light blue) and concrete ideas (dark blue) to increase physical activity expressed by patients*
 2 *and GPs. A range of different motives and recommendations was stated. Most important was exercise in groups, providing a*
 3 *summary of regional sports activities, use of digital consultation tool and providing a handout.*

4

5 **Patient-doctor relationship**

6 An important aspect influencing beliefs on PA and motivation was the doctor-patient-relationship.
 7 Most patients and GPs expressed a satisfactory relationship. Some interview partners (GPs and
 8 patients) described contact between GPs and patients as mutualistic: *“It’s often like you have a*
 9 *treatment contract somewhere and as a doctor you obviously always have the wish to help your*
 10 *patient... It can be very hard sometimes because you have to be careful about how you communicate*
 11 *with the patient. You don’t want to make them feel like they are not understood or lectured from*
 12 *above.” (GP Carla), “You always trust your doctor.” (Dmytro)*

13 There seems to be a desire for a relationship based on partnership, especially by the doctors:
 14 *“Together with the patient, I make an effort to find opportunities to do sports that are also doable to*
 15 *them.” (GP Anke), “I merely see myself as a supporter in the patient’s life plan.” (GP Matthias)*

16 Nonetheless, in some patients, this relationship has changed in a way that the patient him/herself
 17 feels like an expert in the field of CBP. They tend to see themselves as consumers and doctors as
 18 service providers. Patients clearly define their needs and expect the GPs to provide them with
 19 information and prescriptions: *“That were the next steps and then –so to speak- I’ve just ordered*
 20 *what I want from my GP.” (Louisa)*

21 To some extent, this was also the perception of the GPs: *“Speaking from my own experience it’s more*
 22 *that the patients coming with back pain have an idea of pain-relieving shots. Some also ask for*
 23 *physiotherapy or even massage treatments.” (GP Carla)*

24 However, some doctors view themselves like authority figures (in the sense of a paternal doctor-
 25 patient relationship) and expressed their frustration in the treatment of patients with CBD. They

1 often believe patients do not follow their PA recommendations.: *“The failure rate of our counselling*
2 *concerning chronic back pain is definitely above 50%. As in, I recommend being more active and doing*
3 *sports but the patients don’t comply.” (GP Rolf). This might partly lead to a negative view of patients*
4 *as “couch potatoes” (GP Melanie) and “lazy” (GP Karl).*

5 In line with the feeling of frustration of GPs, some patients indicated to feel stigmatised by their GPs
6 and other health providers: *“I would like people to be taken more seriously.” (Anna)*

7 Putting perceived doctor-patient relationships in connection with participant characteristics, in our
8 sample, older GPs tend to see their role in a paternalistic model and younger GPs in a partnership-
9 based model.

10

11 Discussion

12 Summary:

13 In our study, we were able to explore perceptions, barriers and motivators of PA in individuals with
14 CBP and GPs. One main result is that themes were very similar between patients and GPs. barriers
15 affecting PA. Main barriers were maintaining PA as a routine, especially, when pain has already
16 improved, insufficient regional availability, aggravated by COVID-restrictions and lack of time.
17 Outdoors PA was seen as having a particularly positive impact in physiological and mental health.
18 Furthermore, GPs highlighted specific characteristics of patients as difficult in the motivation for PA.
19 Interview partners mentioned a broad range of strategies and concrete ideas to increase PA, such as
20 exercise in groups or digital tools. Both groups perceived their patient-GP relationships as positive.
21 However, the results showed some important differences: some GPs viewed their role in a
22 partnership-based or paternalistic type of patient-doctor-relationship, while patients faced their
23 doctor with the idea of being a service consumer. This might have led to a negative view of the
24 patient characterized by aspects like sense of entitlement and might be one reason for feelings of
25 failure, frustration and resignation on both sides.

26

27 Comparison with existing literature

28 The behaviour change wheel framework was used to understand views of PA ²³. Interview partners
29 expressed barriers in all three behavioural domains: (1) capability to perform PA was restricted, e.g.
30 due to comorbidities, (2) opportunity was described as limited, e.g. due to COVID restriction, and (3)
31 a main barrier was motivation, as interviewees described long-term adherence (maintaining PA as a
32 routine) as particularly difficult. Looking at the intervention functions interview partner expressed a
33 broad range of strategies to increase PA. One main theme in this context was that it is not type of PA
34 that is important, but the factor that enjoyment is associated with PA. This goes in line with the
35 results of the Cochrane Review on adherence to exercise: Similar to our findings, Jordan et al have
36 shown that it is not a specific form of exercise that leads to improved adherence and that patient
37 preferences should therefore be taken into account ¹⁵. Furthermore, in previous RCTs it has been
38 shown that goal setting and regular reminders can be effective to improve adherence ^{15, 24}. However,
39 our interview study revealed a broad range of views: Some participants found goal setting and
40 regular reminders supportive, whereas others expressed a strong opinion against those strategies.

1 Our interviews revealed a discrepancy of patient-doctor-relationship: GPs see their role in a
2 partnership-based or paternalistic type, while patients partly face their doctor with the idea of being
3 a consumer²⁵. Allegretti et al. have also described a mismatch of different models, but not in the
4 model of doctor-patient-relationship, but rather in the explanation of the cause of back pain. In their
5 qualitative study, physicians explained disease with a biopsychosocial model, whereas patients were
6 interpreting back pain in the sense of a biomechanical model. In line with our results this mismatch
7 of different models also leads to a high level of frustration of physicians in caring for patients.
8 Doctors felt relegated to a support role, which corresponds to the consumer model in our sample.
9 Despite the mismatch, the majority of interviewees stated – as in our study - that they have a high
10 level of trust in their GPs²⁶.

11 The difference in perceived doctor-patient relationship might lead to negative emotions on both
12 sides. On the one side, in our study, some patients mentioned feeling stigmatised and not taken
13 seriously. On the other side, some GPs felt frustrated and seemed to have partly a negative view of
14 patients with CBP. In line with our results, the meta-synthesis on patients' experience of CBP noted a
15 tensed relationship with health professionals as one main theme. In some included studies patients
16 felt stigmatised and being viewed as culpable, seeking secondary gain and lazy²⁷.

17 The discrepancy in perception of doctor-patient-relationship and resulting negative emotions is
18 highly important as relationship plays a key role in advising patients with CBP. Holt et al. have
19 demonstrated that doctor-patient-relationship is crucial for reassurance during low CBP
20 consultations³.

21 Notably, patients and GPs indicated a lack of knowledge in consultation on PA and some GPs
22 expressed feeling unconfident in advising patients on PA. This goes in line with the results of
23 Chatterjee et al.: In their sample more than half of the GPs did not feel confident in talking about
24 exercise with patients¹¹. Our study revealed that a simple handout with local PA opportunities would
25 have been considered helpful to overcome this lack of knowledge. Such support is also
26 recommended by public health concepts (e.g. Arthritis Research UK, the Department of Health, NHS
27 England and Public Health England recommend leaflets for people with musculoskeletal conditions to
28 provide physical activity interventions)^{28, 29}.

29 **Strengths and Limitations:**

30 Some limitations have to be taken into consideration. Most of the interviewed patients were
31 recruited by their GP. This may have led them to express positions that were acceptable to their GP.
32 However, some participants clearly felt free to criticise. Most of the interviews were performed via
33 telephone because of COVID-restrictions. It is difficult to assess whether this had an impact on
34 interviews³⁰. On the one hand, it may have been more difficult to establish a connection with the
35 interviewee than in a face-to-face interview, on the other hand, interviewees may feel more relaxed
36 on the phone and talk about topics that are more sensitive. All interview partners knew that views on
37 PA would be discussed. This could have potentially resulted in a selection bias, as individuals, who
38 agreed to participate, might be more interested and more motivated. Interviews were held and
39 coded by NL and NK, both working as GPs. Personal experience in the field may have influenced
40 study results.

41 An important strength of our study is that we interviewed GPs and patients in parallel. Therefore, we
42 were able to rely on the views of the other interviewees when conducting and analysing the study.
43 However, as we did not conduct "paired interviews", we could not directly contrast the different
44 views. Our study team consists of researchers with different backgrounds, including medical,

1 psychological and biological. Study results were continuously discussed and further developed within
2 the team. Thereby, results are double-checked against different views. Three researches work as GP,
3 which might have influenced data collection and analysis. The GPs interviewed might have been
4 more willing to share their experiences, while the patients might have been more reluctant or careful
5 in their wording compared to a neutral interviewer. Personal experiences with PA and patients with
6 CBP might have influenced the data analysis. To be able to interview patients and GPs with various
7 backgrounds we extended our recruitment beyond our local research practice network.

8

9 **Implications for Research and Practice:**

10 To the best of our knowledge, this is the first qualitative study exploring views and experience of PA
11 in both individuals with CBP in patients and GPs. Our study provides an important insight into
12 contextual factors when advising individuals with chronic pain to participate in PA. Doctor-patient-
13 relationship plays an important role in consultation of individuals with CBP and our study revealed
14 the impact of issues in that relationship on PA consultations. It is highly important to develop studies
15 investigating the effect of promoting behaviour change, especially PA, on the patient-GP relationship.
16 Primary Care plays a key role in advising patients on PA and better understanding of factors impeding
17 and promoting PA in patient with CBP can directly translate into improved patient care.

18

19 **Conflict of interest:**

20 None

21

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24

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29

30 **Presentations prior publication:**

31 Preliminary results were presented at the DEGAM conference 2021.

32

33 **List of abbreviations:**

34 CBP: chronic back pain, GP: general practitioner, PA: physical activity, , RCT: randomized controlled
35 trial, TENS: transcutaneous electrical nerve stimulation, all participants received pseudonyms
36 (fictitious names according to the recommendation on pseudonymisation ²⁰)

37

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