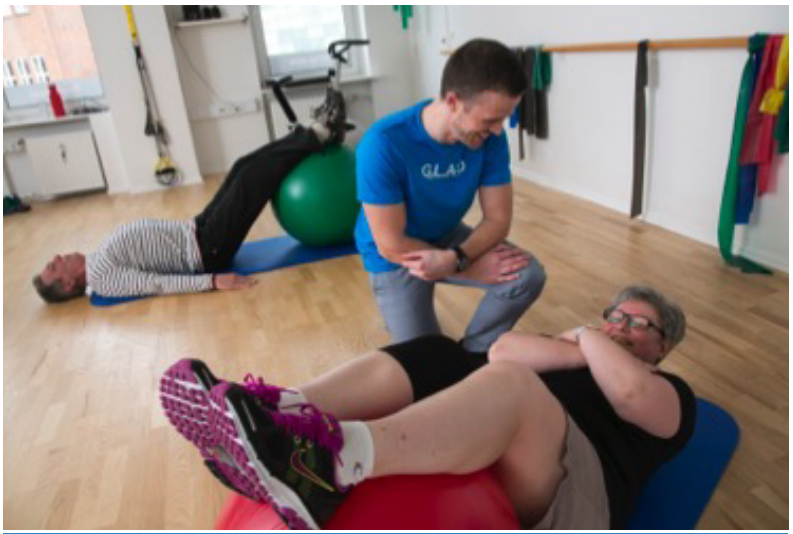
GLA:D®

Annual Report 2015



Highlights

10 000 Danes with osteoarthritis

- Reduced pain, better function and increased physical activity level
- Fewer were on sick leave and fewer were taking pain killers

SDU

GLA:D®

Annual Report 2015

GLA:D® registry

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www.GLAiD.dk

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GLA:D®

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1. Introduction

Osteoarthritis is a major problem for both the individual patient and society[1], and it is one of the leading causes of impaired function worldwide.[2] Almost 900 000 Danes suffer from osteoarthritis,[3] and the annual costs of osteoarthritis to society are estimated at DKK 11.5 billion.[4] Due to ongoing demographic changes, the incidence of osteoarthritis is expected to increase significantly in the years to come,[5] which emphasizes the magnitude of this disorder and stresses the need for a paradigm shift towards early treatment.[6]

National as well as international clinical guidelines for treatment of osteoarthritis recommend a combined approach consisting of patient education, exercise and weight loss (if needed).[7-9] In spite of this, there is mainly focus on medical and surgical treatment. Very few patients have completed patient education, exercises and weight loss as an element of their treatment plan.[10-12] This may be due to the fact that there is a need for a comprehensive patient and context specific approach to successfully implement the clinical guidelines.[13] Good Life with osteoArthritis in Denmark (GLA:D®) represents such an evidence-based treatment plan for knee and hip osteoarthritis consisting of patient education and neuromuscular exercise. Moreover, GLA:D® is an electronic registry with a unique opportunity to follow patients with hip and knee osteoarthritis from the onset of the first symptoms and evaluate the effect of the treatment. Pilot projects have shown that GLA:D® is both feasible in a Danish context and effective at reducing pain and improving function and quality of life.[14-15] On 22nd and 23rd January 2013, the first 40 physical therapists attended the GLA:D® course at the University of Southern Denmark (SDU) in Odense. This also marked the beginning of the electronic GLA:D® registry, in which the first patients were included on 29th January 2013. At end-2015, nine courses had been held and a total of 594 physical therapists from 284 GLA:D® units from all over Denmark had completed the courses.

The GLA:D® annual report 2015 presents an overview of data from the electronic registry. Statistics are exclusively descriptive and the results must be interpreted with caution. Patient-reported and physical therapist-reported data are included as well as objective data on patients registered up to and including 31st December 2015. At that time, data from **9 827 patients** from **227 GLA:D® units** had been reported, primarily from private clinics, but also from municipalities and hospitals. These figures have skyrocketed since the first annual report of 2013, which included 719 patients from 49 GLA:D® units. Due to the massive interest from physical therapists and other health professionals, patients, politicians and the media, there is every reason to believe that this increase will continue in the years to come. GLA:D® seems to have filled a pressing need in Denmark (visit www.glaid.dk).

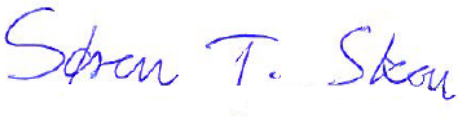
This annual report primarily displays results on a national level, however, you will also find results at GLA:D® unit level. As more and more patients from the individual GLA:D® units are included, the registry will create a unique basis for quality assurance and improvement of osteoarthritis treatment within the individual GLA:D® units, and thus guarantee that patients are offered the

best available evidence-based treatment. Today, all units have access to their own results and may thus compare their results to the results presented in this annual report.

We hope that the GLA:D® registry may contribute to an overview of the osteoarthritis population and the effect of implementing the clinical guidelines in clincal practice with focus on patient education and exercise, and thus in the long run improve the quality of osteoarthritis treatment in Denmark.

Happy reading!

Odense, 26th March 2016



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2. Summary GLA:D® Annual Report 2015

Background

National and international clinical guidelines for treatment of hip and knee osteoarthritis recommend a combined approach consisting of patient education, exercise and weight loss (if needed). Nevertheless, treatment providers have been slow to adopt these guidelines. Good Life with osteoArthritis in Denmark (GLA:D®) is a national initiative launched by the Research Unit for Musculoskeletal Function and Physiotherapy at the University of Southern Denmark with the overall objective of implementing the clinical guidelines for treatment of osteoarthritis into clinical practice in Denmark.

GLA:D® consists of three mandatory elements

- Education of physical therapists in delivering patient education and neuromuscular exercise training
- Patient education and neuromuscular exercise for patients at the individual GLA:D® units
- Registration of patient data in the national GLA:D® registry

GLA:D® objectives

- Reduced pain
- Reduced intake of painkillers
- Increased physical activity
- Improved quality of life
- Decrease in health care visits and costs for the individual patient and society
- Equal access to evidence-based treatment irrespective of place of residence, financial situation and health care sector

2015 results in brief: How many patients and who are included in the GLA:D® registry, and how are they doing?

- GLA:D® has existed as a national registry since 29th January 2013. The 2015 annual report presents the results of patients with data included in the registry on 31st December 2015. Data were collected from **227 GLA:D® units** from all over Denmark, where **9 827 patients** (74% women, average age of 64.4, 75% report knee pain as their primary problem) had had their first visit with the physical therapist and **5 485** had completed the 3-month follow-up and **2 149** had completed the 12-month follow-up
- 8% of hip patients and 13% of knee patients reported having been absent from work during the past year due to their hip or knee osteoarthritis
- Average symptom duration for hip osteoarthritis was approx. three years and approx. 4.5 years for knee osteoarthritis

- 60% had problems with at least one other hip or knee joint besides the joint they reported as their primary problem
- 35% reported having problems with hand or finger joints besides their hip or knee osteoarthritis
- Average BMI for hip patients was 26.7 and for knee patients it was 28.4
- 82% of the patients experienced joint pain every day or all the time prior to the program
- Prior to the program, 81% reported having walking problems as a consequence of their hip osteoarthritis and 79% reported having walking problems as a consequence of their knee osteoarthritis
- Pain intensity:
    - Prior to GLA:D®, it was 46.4 (VAS 0-100) for hip osteoarthritis and 47.6 for knee osteoarthritis
    - After GLA:D® (3 months), it was 10.6 lower (23% reduction) for hip osteoarthritis and 13.5 lower (28% reduction) for knee osteoarthritis, and after 12 months it was 12.3 lower for hip osteoarthritis (27% reduction) and 13.4 lower for knee osteoarthritis (28% reduction)
- Use of joint related painkillers:
    - Prior to GLA:D®, 58% reported using either paracetamol, NSAID or opioids/opioid-like medication because of their hip problems and 56% because of their knee problems
    - After GLA:D® (3-month follow-up), 45% of hip patients and 37% of knee patients used these medications because of their knee and/or hip problems
- Sick leave:
    - Prior to GLA:D®, 24.3% had been on sick leave during the past year because of their joint
    - One year after GLA:D® (12-month follow-up), only 14.9% had been on sick leave during the past year because of their joint. The difference seems to be due to fewer patients with knee osteoarthritis on sick leave
- 32.4% had increased their self-reported level of physical activity after three months and 31.3% had increased their level of physical activity after 12 months compared to before GLA:D®

  93% of hip patients and 92% of knee patients were satisfied or very satisfied with GLA:D® after three months, and 94% of hip patients and 95% of knee patients made use of what they had learned in the GLA:D® sessions on a weekly basis or more frequently after three months.

The future in clinical practice

In this annual report, symptom duration prior to GLA:D® continues to decrease. This may be associated with a tendency towards early treatment of osteoarthritis (as recommended by the

clinical guidelines). The majority of patients in the GLA:D® registry have had symptoms for many years, have symptoms from other joints as well, have other comorbidities, are overweight and experience walking problems. This highlights the need for GLA:D® targeted at increasing the understanding of the situation of the individual osteoarthritis patient and launching specialized exercise programs and weight loss, if relevant, to improve the level of function.

3. About GLA:D®

3.1. The three elements of GLA:D®

Good Life with osteoArthritis in Denmark (GLA:D®) consists of three mandatory elements:

1. Education of physical therapists in delivering patient education and neuromuscular exercise training
2. Patient education and neuromuscular exercise for patients at the individual GLA:D® units
3. Registration of patient data in the national GLA:D® registry

3.1.1. Education of physical therapists

Physical therapists interested in starting evidence-based education and exercise programs for osteoarthritis patients must complete a two-day course. The course comprises existing evidence on osteoarthritis and treatment of osteoarthritis as well as the use of and need for national health care registries. Moreover, the physical therapists get a thorough introduction to the GLA:D® approach, from the inclusion of the patient and the registration in the GLA:D® registry to treatment and tests and the 3-month follow-up. Moreover, all practical elements of GLA:D®, including neuromuscular exercise, tests and how to practically launch GLA:D® at a private practice, municipal rehabilitation center or hospital, are introduced. **The course must ensure that all physical therapists offer consistent treatment programs that live up to the guidelines and evaluate their activities so that all patients irrespective of place of residence and financial situation are offered evidence-based treatment in the long term.** Thus, the GLA:D® course is a complete package solution that physical therapists can readily apply in their practice. In combination with the option of GLA:D® start-up support, this will ensure optimal conditions for implementing the clinical guidelines into clinical practice.

3.1.2. Patient education and exercise

GLA:D® patient education and exercise programs are based on the newest evidence within the field combined with the ideas and requests put forward by patients and physical therapists. GLA:D® involves a 'minimal intervention' consisting of three patient education sessions and six weeks of neuromuscular exercise training (Figure 1).

The patient education consists of two sessions conducted by a physical therapist and one session conducted by a former GLA:D® patient with a special ability to communicate his or her experience to the patients. The two sessions conducted by a physical therapist aim at providing the patients insight into osteoarthritis and treatment of osteoarthritis with particular focus on exercise and self-help advice. The third session is intended to allow the patients to identify with an expert patient who has been in their shoes, but who has achieved significant improvements in his or her life situation as a result of GLA:D®. All three sessions have been arranged so that patients are

encouraged to participate actively and ask questions and share experiences in order to enhance the sense of community within the group.

Moreover, GLA:D® strongly encourages the patients to complete the supervised group training sessions twice a week for six weeks as exercise is essential for improving symptoms and quality of life. Patients who, for one reason or another, do not wish to participate in the supervised training sessions can perform neuromuscular exercises at home twice a week for six weeks based on detailed instructions by a physical therapist. After GLA:D®, the patient is offered support and advice on how to continue being physically active either under the supervision of the physical therapist or in his or her local environment to preserve the effect of GLA:D® in the long term.

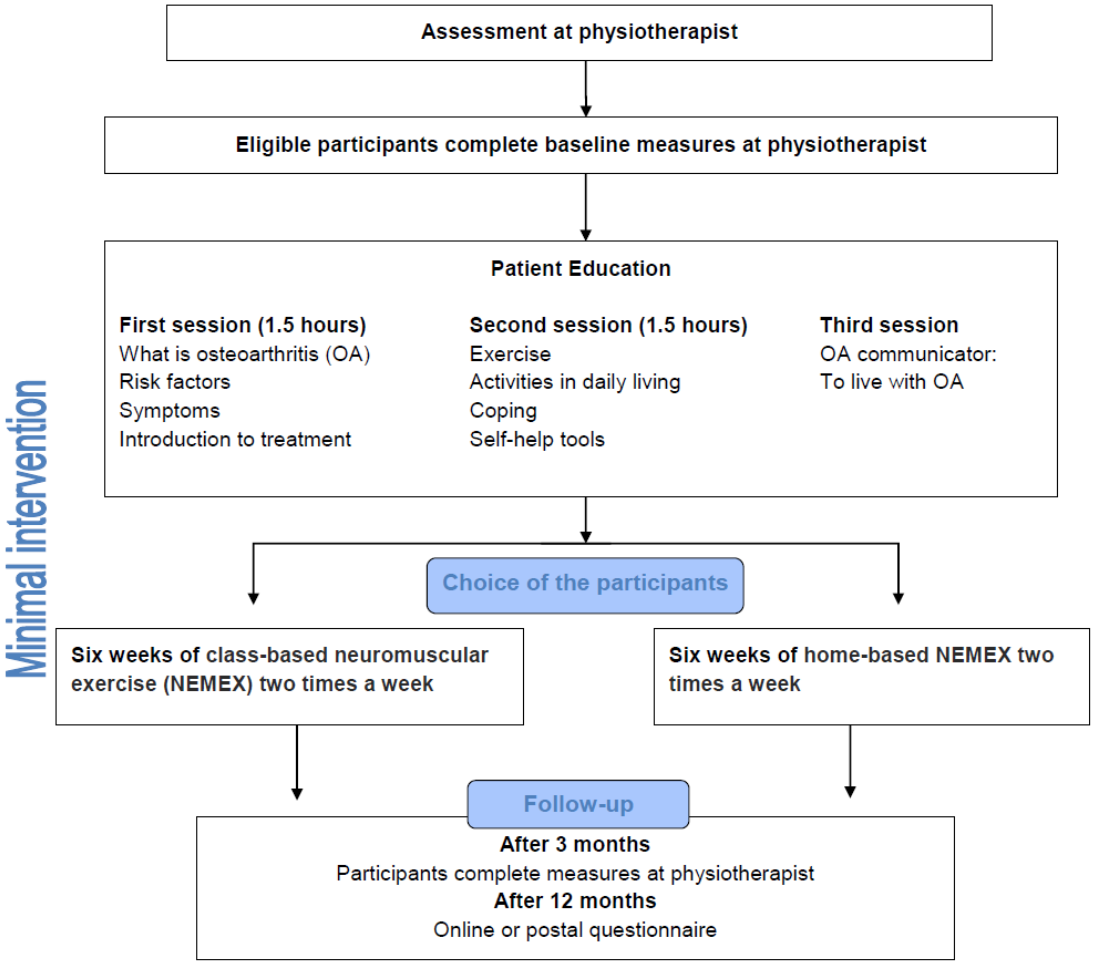


Figure 1. GLA:D® for patients

3.1.3. The GLA:D® registry

The GLA:D® registry is both a registry designed to describe the osteoarthritis population in Denmark and an intervention registry for osteoarthritis patients. Thus, you may rightly call the GLA:D® registry an osteoarthritis registry.

The GLA:D® registry is constructed as a system (developed and operated by Procordo ApS) which allows various adjustments to be made when the need arises to add or modify questions or other elements.

At the same time, the registry encourages a high degree of user involvement and joint ownership. This to ensure that the registry is a meaningful and useful tool for the individual physical therapist in order that he or she will use the registry as an integrated part of his or her working routine, intervention and evaluation of each patient. Also, in the future, it will be possible to integrate data from the registry with data from the Danish Knee Arthroplasty Registry (DKR) and the Danish Hip Arthroplasty Registry (DHR), among others, which will make it possible to follow the individual patient from the onset of symptoms (the GLA:D® registry) to a possible arthroplasty (DKR and DHR). This offers a unique opportunity to optimize future treatment approaches to this group of patients.

Before program initiation and after completion of the patient education and exercise programs (after three months), all GLA:D® patients must be evaluated using a physical therapist form, a patient questionnaire as well as two physical tests. Finally, the patient will automatically receive a patient questionnaire after twelve months (Figure 1). These evaluations are included in the GLA:D® registry and will contribute to describing this group of patients and optimizing and ensuring the quality of treatment both at the local clinic but also on a national level.

The evaluations contain demographic questions as well as the following questions which may be used to evaluate the effect of GLA:D®:

- Average pain intensity in knee/hip during the past month (Visual Analog Scale (VAS 0-100), where 0 represents no pain and 100 the most intense pain)
- Quality of life (EQ-5D and the Quality of Life subscale of the Knee injury and Osteoarthritis Outcome Score (KOOS QOL; 0-100, where 0 represents extreme knee problems and 100 no knee problems) and the Hip disability and Osteoarthritis Outcome Score (HOOS QOL; 0-100, where 0 represents extreme hip problems and 100 no hip problems).
- Level of physical activity (days of the week with at least 30 minutes of physical activity, 0-7 days)
- Self-efficacy (average of the two subscales Pain and Other symptoms of the Arthritis Self-Efficacy Scale (ASES; 10-100, where 10 represent very uncertain and 100 very certain). In this case, self-efficacy means the patient's conviction that he or she can successfully improve pain and other symptoms.
- Body Mass Index (BMI)
- Sick leave
- Medication use, surgery and wanting surgery

The two physical tests included in GLA:D® measure how many times a person can sit and stand from a chair within 30 seconds and how long it takes a person to walk 40 meters. The two tests are also included in the registry as measurements of muscle function and strength in the legs and walking speed, respectively.

Moreover, information on patient satisfaction and compliance with the patient education and exercise programs is registered after three months and again after twelve months.

In the form to be filled out in connection with the first visit, the physical therapist must enter the patient's e-mail address in order that the patient questionnaires for the first visit, the 3-month follow-up and the 12-month follow-up may be e-mailed to the patient. Of the 9 827 patients included in this annual report, 8 885 patients were registered with an e-mail (90%). The remaining patients can fill in the questionnaire using a computer or tablet at the clinic or can choose to fill in a paper questionnaire.

3.2. GLA:D® objectives and vision

3.2.1. GLA:D® objectives

- All osteoarthritis patients shall have access to patient education and exercise in accordance with the clinical guidelines irrespective of place of residence and financial situation
- Surgery shall be considered only when non-operative treatment does not provide satisfactory results

3.2.2. Aims and suggestions for future quality indicators

- Reduced pain
- Reduced intake of painkillers
- Increased physical activity
- Improved quality of life
- Decrease in health care visits and costs for the individual patient and society
- Equal access to evidence-based treatment irrespective of place of residence, financial situation and health care sector

No quality indicators exist within this area in Denmark. Examples of suggestions for future quality indicators include: at least 80% of patients must report a 15-point reduction in pain intensity on a 0-100 VAS scale after three months and one year, at least 80% of patients in the registry must be physically active for at least 30 minutes on most days of the week after one year, EQ-5D must increase by 0.10 after one year etc. A debate is needed to discuss which quality indicators to include in the GLA:D® registry and on which grounds. It is essential that the quality indicators are targeted at osteoarthritis patients, provide clinic-specific information and are time-relevant so that they may benefit the individual GLA:D® unit in their efforts to optimize treatment. The discussion about relevant quality indicators will involve a number of experts, including patients, before the final quality indicators may be presented.

3.2.3. GLA:D® vision 2017

In 2013, we outlined a 5-year vision for the development of GLA:D®. Both goals have already been achieved.

- 400 physical therapists have completed the GLA:D® course
- 7 000 patients have completed GLA:D® and are included in the GLA:D® registry

3.3. Generalisability, validity and reliability of the GLA:D® registry

To be able to assess the generalisability, validity and reliability of the results in a registry, it must be clear how well the registry covers the patient population and how complete the data are. Danish Regions has listed a number of basic requirements to be met in order to be designated as a national, clinical quality database and to receive grants from the database fund of the regions in Denmark[16]:

1) Coverage. An established clinical quality database must be national and cover at least 90% of all patients in the secondary health care sector. This requirement does not apply to the primary health care sector sector.[16]
2) Completeness. An established clinical quality database must have a completeness of data of at least 80%.[16]

3.3.1. Coverage

In time, the GLA:D® registry aims at becoming a clinical quality database; consequently, it is our ambition to achieve the above goals. This is also in line with the objectives of GLA:D®, namely that all osteoarthritis patients shall have access to patient education and exercise in accordance with the clinical guidelines irrespective of place of residence and financial situation. GLA:D® is primarily offered in the primary sector (private physiotherapy clinics and municipal rehabilitation centers), where no coverage requirements apply.

The requirement that the clinical quality database must be national has already been met as GLA:D® units are present in all five regions of Denmark across private physiotherapy clinics, municipal rehabilitation centers and hospitals (figure 2).

Figure 2. GLA:D® units in Denmark at 31st December 2015. The numbers in the blue and yellow circles indicate the number of units in that particular area. The red markings indicate that there is only one unit in the area.

At end-2015, 594 physical therapists - and a total of 284 GLA:D® units - had completed the GLA:D® course in Denmark (visit www.glaid.dk for further information on the individual GLA:D® units). Of these 284 GLA:D® units, 227 units had registered patients in the GLA:D® registry at the year-end (80% compared with 63% in the Annual Report 2014). It is difficult to control whether the remaining GLA:D® units are organizing GLA:D® programs for patients without registering them in the registry. **To ensure the quality of the treatment, focus will in the coming years be on clarifying that all GLA:D® units must meet the GLA:D® principles (education, exercise and evaluation) in order to be able to call themselves GLA:D® units and advertise and offer GLA:D® and being registered on the GLA:D® website**. Consequently, GLA:D® strongly encourages all GLA:D® units to register patients in the GLA:D® registry to enhance the quality of the registry, but also because it will be an important element of the quality assurance of the individual GLA:D® unit. A survey among the GLA:D® units indicates that local challenges (practical, political, management etc.) are the reasons why these GLA:D® units have not yet gotten around to organizing GLA:D® programs for patients. GLA:D® provides the physical therapists with a GLA:D® start-up tool kit, and at glaid.dk there is a forum where the units may share experiences and tips on getting started.

The popularity of GLA:D® will probably also make it easier to implement GLA:D® irrespective of where and which sector the physical therapist comes from. In 2015, a total of 176 physical therapists completed the GLA:D® course, and three courses have already been scheduled for 2016. With a view to the resulting sharp increase in GLA:D® units, the coverage is expected to improve further in the years to come.

To allow osteoarthritis patients from the GLA:D® registry to be compared with osteoarthritis patients who are not included in the GLA:D® registry, GLA:D® physical therapists collect information on patients who do not wish to participate in the GLA:D® program. In future years, it will be possible to detect differences between these groups and thus identify the osteoarthritis population more clearly and ensure optimal treatment for all osteoarthritis patients. At year-end, 61 patients (corresponding to 0.6% of the total GLA:D® registry) did not wish to participate in GLA:D®. The three primary reasons were a desire for another treatment (n=18), not able to attend (n=16) and lack of time (n=15).

3.3.2. Completeness

The degree of completeness indicates the number of patients, who have completed the 12-month follow-up, with complete data. At year-end, 931 patients (9%) had dropped out of the GLA:D® program for different reasons (table 1). The average age (SD) of the patients who dropped out was 65.3 (11.2) and 73% were women. 52% listed short-term higher education or a lower level as their highest level of education and 74% reported the knee as their primary problem. Average pain (SD) prior to GLA:D® for those who dropped out was 52.8 (22.8) for hip patients and 51.6 (23.0) for knee patients. Average BMI (SD) prior to GLA:D® for those who dropped out was 27.8 (4.9) for hip patients and 29.0 (5.6) for knee patients.

Reasons for stopping	No. of patients
Does not wish to participate after all	22.7 %
Cannot attend/manage treatment	15.8 %
Other treatment	14.5 %
Patient affected by own or next of kin's illness	14.2 %
More pain	11.7 %
Lack of time	11.3 %
New symptoms	5.3 %
Financial reasons	4.0 %
Patient is dead	0.4 %

Table 1. Reasons for dropping out of GLA:D® (n=931).

If you allow for a delay of up to one month of the 3-month and the 12-month follow-ups and deduct those who dropped out of GLA:D®, a total of 6 163 patients should have filled in the 3-month patient questionnaire and 2 796 patients should have filled in both the 3-month and the 12-month follow-ups at end-2015. Thus, the degree of completeness for the first visit to the 3-month follow-up was 84% (5 169 out of 6 163 patients) and for the first visit to the 12-month follow-up it was 68% (1 901 out of 2 796 patients). The degree of completeness for the first visit, the 3-month and 12-month follow-ups was 65% (1 819 out of 2 796 patients).

Securing a high degree of completeness of longitudinal data is quite a challenge. Compared with registries that register data only once, we are faced with a number of factors that we cannot control as data is collected at three time points. The set-up of the GLA:D® registry involves a

number of control mechanisms and possibilities of adapting the data entries to a local context, which may help ensure a high degree of completeness:

- You cannot skip questions
- You cannot check off two boxes if a question requires only one answer
- Borderline values have been determined, and a warning is issued when an entry falls outside the normal range (e.g. very high weight in combination with low height)
- The physical therapist, the patient and the project manager automatically receive an e-mail when a GLA:D® form is overdue
- The patient may fill in the questionnaire at home - online or on paper, if the patient has no e-mail address
- The forms may be completed in a number of different ways adjusted to the context of the individual GLA:D® unit
- A notice will warn you if you try to enter a form on a patient, who is already included in the registry

4. Results 2015 – Changes from first visit to 3- and 12-month follow-ups

This section presents the changes from the first visit to the 3-month and 12-month follow-ups. Thus, only paired data are included, i.e. data from patients who had attended the first visit as well as the 3-month/12-month follow-up before year-end 2015. The results are presented separately for hips and knees for most variables. The number of participants in each analysis will be specified either in the text or in brackets.

At end-2015, a total of **9 827 patients** were registered in the GLA:D® registry and had completed at least **the first visit with the physical therapist** (figure 3), 9 008 had filled in the patient questionnaire for the first visit and 9 401 had completed the physical tests for the first visit. Of these patients, **25% reported the hip as their primary problem and 75% reported the knee as their primary problem**. In this annual report, these problems are referred to as hip osteoarthritis and knee osteoarthritis[1], respectively, and the results will often be treated separately for hips and knees to provide information on each of the two diagnoses.

At year-end 2015, a total of **5 485 patients** had completed the **3-month follow-up** (figure 3), 5 846 had filled in the patient questionnaire after three months and 5 433 had completed the physical tests after three months. The results after three months are included only for patients with data from both the first visit and the 3-month follow-up.

2 149 patients had filled in the questionnaire **after 12 months** (figure 3). Results after 12 months are included only for patients who had filled in the questionnaire at first visit and after 12 months.

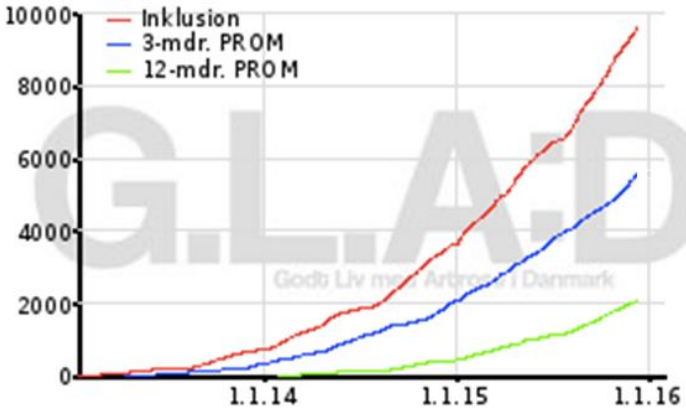


Figure 3. Graphic presentation of the number of patients included in GLA:D® ("Inklusion") and the number of patients who had completed the 3-month and 12-month follow-ups ("3-/12-mdr. PROM") at year-end 2015

1 In the GLA:D® project, osteoarthritis is defined clinically according to symptoms. Correlation between symptoms and radiographic changes is rather poor. Out of the 85% of GLA:D® patients who had had their joints x-rayed, 91% had degenerative changes that were visible on radiographs. This indicates that patients get in touch with GLA:D® at a rather late stage as the process typically begins long before changes are visible. The national clinical guidelines for knee osteoarthritis state that the diagnosis of knee osteoarthritis may be made clinically without a radiographic examination of the knee[7].

4.1. Effect parameters

Pain

The pain intensity (SD; VAS 0-100) for the participants at the first visit, 3-month and 12-month follow-ups are listed in table 2, whereas the difference in pain from the first visit to the 3-month and 12-month follow-ups, respectively, are listed in figure 4.

Time	Hip	Knee
First visit → 3 months	n=1 469	n=4 188
First visit	46.4 (21.2)	47.6 (21.7)
3 months	35.8 (22.4)	34.1 (21.6)
First visit → 12 months	n=591	n=1 512
First visit	45.6 (21.3)	46.4 (21.4)
12 months	33.3 (24.1)	32.3 (24.1)

Table 2. Average pain (SD; VAS 0-100) for participants at first visit, 3-month and 12-month follow-ups

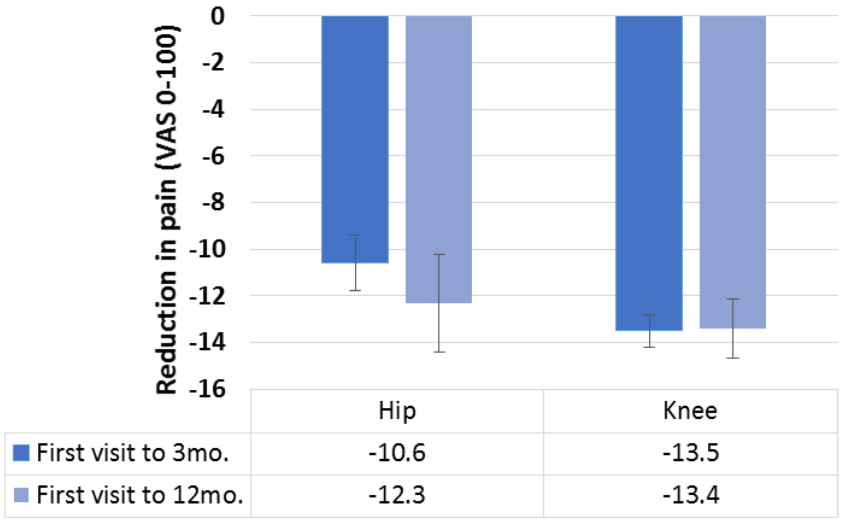


Figure 4. Average reduction in pain (VAS 0-100) from the first visit to the 3- and 12-month follow-ups. A total of 1 469 hip patients and 4 188 knee patients were included in the analysis after three months, while 591 and 1 512 were included in the analysis after 12 months. Error bars indicate 95% confidence intervals.

If the analysis is limited to those patients who did not undergo total knee or hip replacement surgery during the period, the average reduction in pain amounted to (95 % CI) 10.4 (9.2 to 11.6) and 9.4 (7.3 to 11.5) for hip patients at 3 and 12 months and 13.5 (12.8 to 14.2) and 12.4 (11.1 to 13.7) for knee patients at 3 and 12 months.

Pain distribution (new variable as of 12th April 2014)

As a new element, participants have drawn their pain distribution within the past 24 hours on a human figure outline (see section 5.1). A total of 26 areas on the front of the body and 30 on the back may be identified as painful.

Data for three months showed that hip patients had reported an average (interval) of 3.5 (0-34) painful areas on the front and the back of the body prior to GLA:D®. At the 3-month follow-up, that number had fallen to 3.2 (0-33) (n=1 479). Data for twelve months showed that hip patients had reported an average (interval) of 2.9 (0-32) painful areas on the front and the back of the body prior to GLA:D®. At the 12-month follow-up, the number was 3.5 (0-30) (n=593).

Data for three months showed that knee patients had reported an average (interval) of 3.3 (0-33) painful areas on the front and the back of the body prior to GLA:D®. At the 3-month follow-up, that number had fallen to 3.0 (0-45) (n=4 217). Data for twelve months showed that knee patients had reported an average (interval) of 2.5 (0-31) painful areas on the front and the back of the body prior to GLA:D®. At the 12-month follow-up, the number was 3.2 (0-39) (n=1 521).

Fear avoidance and physical activity

Data for 3 months (n=5 703) show that prior to GLA:D®, 14.0% were afraid that physical activity and exercise would be detrimental to their joints. After 3 months, the number had fallen to 7.2%. Data for 12 months (n=2 122) show that prior to GLA:D®, 12.7% were afraid that physical activity and exercise would be detrimental to their joints. After 12 months, the number had fallen to 5.2%.

Figure 5 shows how many days of the week the patients of the GLA:D® registry were physically active for at least 30 minutes prior to participation in GLA:D® and after three and twelve months.

32.4% had increased their level of physical activity after three months (n=5 712) and 31.3% had increased their level of physical activity after twelve months compared to first visit (n=2 122).

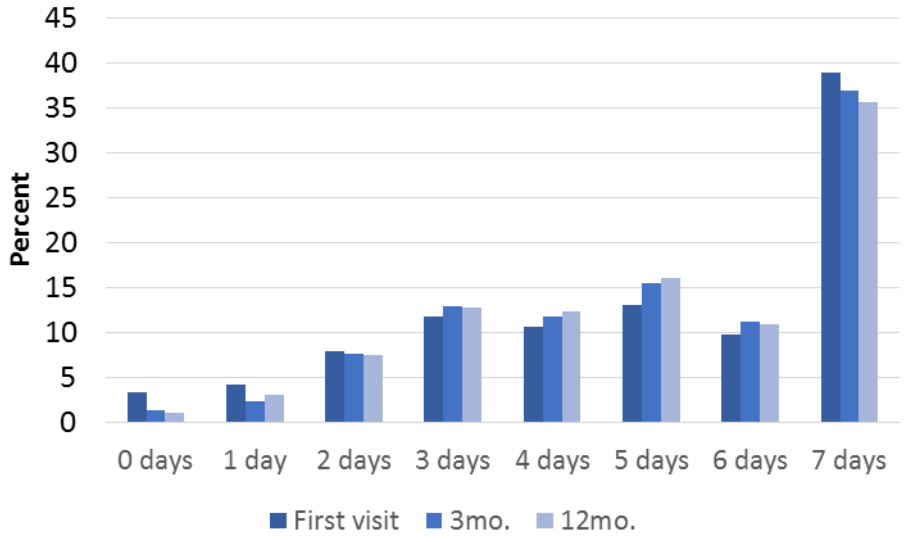


Figure 5. Number of days of the week that the patients of the GLA:D® registry were physically active for at least 30 minutes at the first visit and at the 3-month and 12-month follow-ups. A total of 5 712 patients were included in the analysis at the 3-month follow-up and 2 122 at the 12-month follow-up. To make the graph more readable, the numbers for the first visit are listed only once (participants with data both at the first visit and at the 3-month follow-up).

Joint-related quality of life

Joint-related quality of life is measured using HOOS/KOOS QOL. Joint-related quality of life (SD; 0-100, 100 is best) for participants at the first visit and the 3-month and 12-month follow-ups is shown in table 3, while the difference in quality of life from the first visit to the 3-month and the 12-month follow-up may be found in figure 6.

Time	Hip	Knee
First visit → 3 months	n=1 474	n=4 200
First visit	47.1 (14.5)	45.3 (14.3)
3 months	51.7 (16.8)	51.4 (15.8)
First visit → 12 months	n=591	n=1 516
First visit	46.8 (14.1)	45.9 (14.1)
12 months	56.3 (19.3)	54.8 (17.8)

Table 3. Average quality of life (SD; 0-100, 100 is best) in participants at first visit, 3 and 12 months

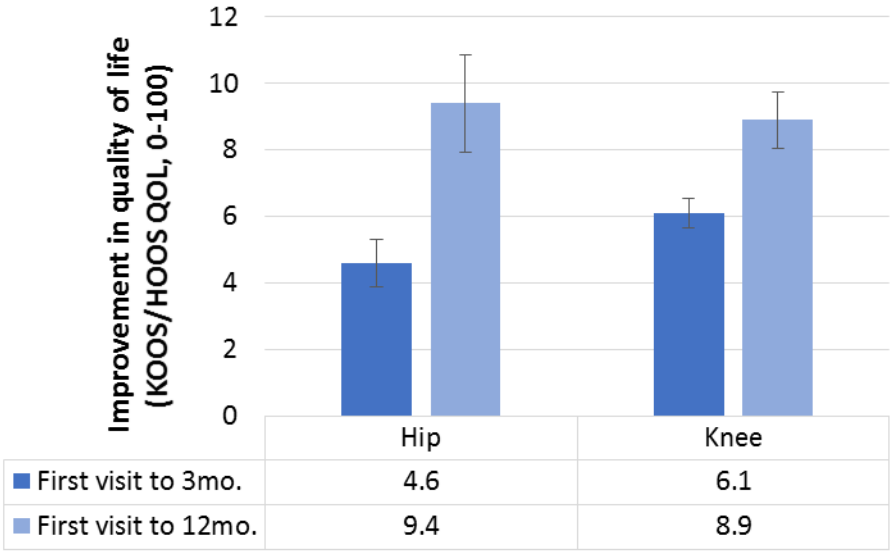
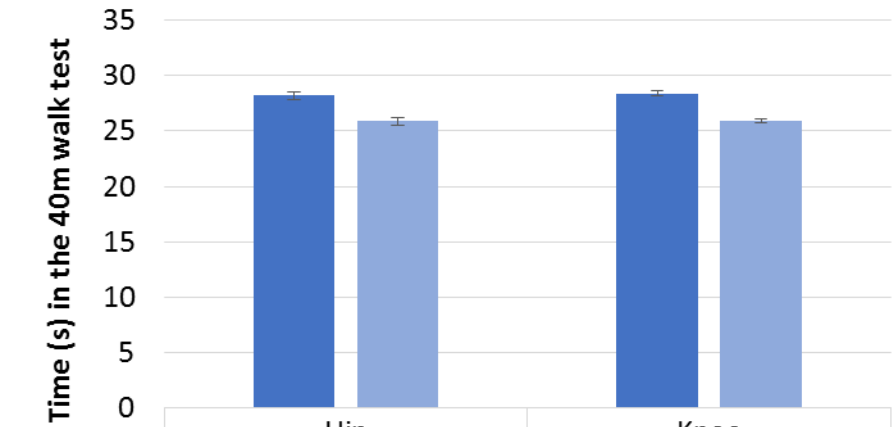


Figure 6. Average improvement in knee-related quality of life (KOOS/HOOS QOL, 0-100) from the first visit to 3-month and 12-month follow-ups. A total of 1 474 hip patients and 4 200 knee patients were included in the analysis after three months, while 591 and 1 516, respectively, were included in the analysis after twelve months. Error bars indicate 95% confidence intervals.

Physical tests

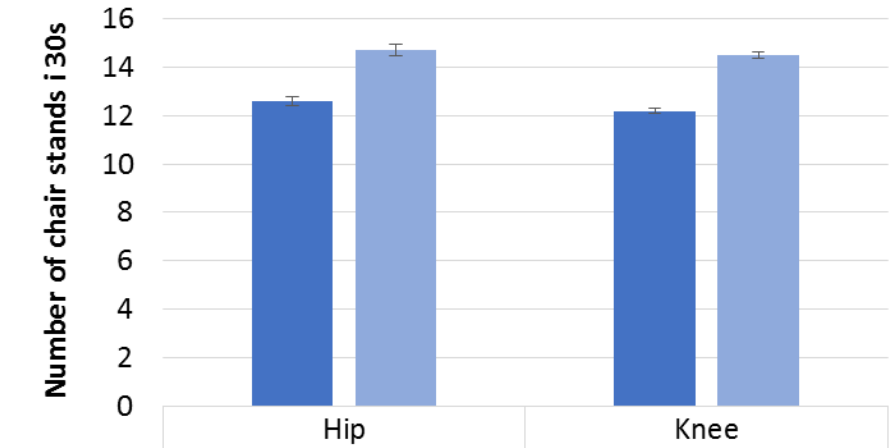
Time in seconds used to complete the 40 m walk test is shown in Figure 7. These results may be converted in different ways, for instance, the average walking speed increased from 1.41 m/s to 1.55 m/s, or that the average GLA:D® patient walked the 400 meter 24 seconds faster after three months. A total of 30 hip patients used a walking aid during the test before GLA:D®, 23 used a walking aid after GLA:D®. A total of 59 knee patients used a walking aid during the test before GLA:D®, 46 used a walking aid after GLA:D®.



	Hip	Knee
First visit	28.2	28.4
3mo.	25.9	25.9

Figure 7. Average time to complete the 40m walk test at the first visit and after three months. Less time indicates better achievement. A total of 1 324 hip patients and 3 849 knee patients were included in the analysis. Error bars indicate 95% confidence intervals.

Number of chair stand repetitions in 30 seconds are shown in figure 8. A total of 15 of the hip patients and 50 of the knee patients were not able to complete at least one chair stand in the chair stand test at the first visit; consequently, they used a modified version. After completing GLA:D®, 12 of the hip patients and 40 of the knee patients were not able to complete one stand.



	Hip	Knee
First visit	12.6	12.2
3mo.	14.7	14.5

Figure 8. Average number of repetitions in 30-second chair stand test at first visit and at 3-month follow-up. A higher number indicates better achivement. A total of 1 319 hip patients and 3 826 knee patients were included in the analysis. Error bars indicate 95% confidence intervals.

Self-efficacy

Self-efficacy (ASES) in participants at the first visit, the 3-month and 12-month follow-ups are shown in table 4, while the difference in self-efficacy from the first visit to the 3-month and 12-month follow-up, respectively, are shown in figure 9.

Time	Hip	Knee
First visit → 3 months	n=1 476	n=4 205
First visit	67.8 (17.3)	69.4 (16.9)
3 months	69.3 (19.1)	71.9 (17.9)
First visit → 12 months	n=589	n=1 519
First visit	68.8 (17.0)	70.4 (16.8)
12 months	70.3 (18.6)	71.7 (18.4)

Table 4. Average self-efficacy (SD; 10-100, 100 is best) at first visit, 3-month and 12-month follow-ups.

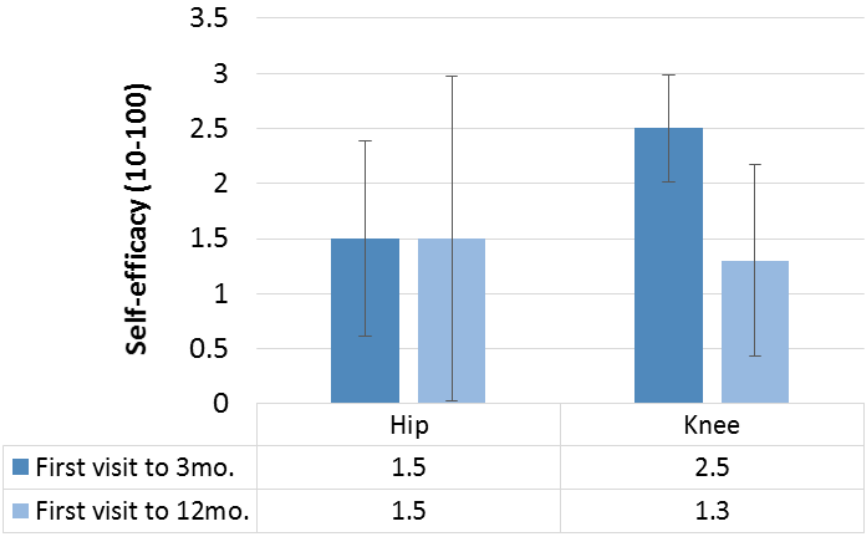


Figure 9. Average improvement in self-efficacy (ASES, 10-100) from the first visit to the 3-month and 12-month follow-ups. A total of 1 476 hip patients and 4 205 knee patients were included in the analysis at the 3-month follow-up, while 589 and 1 519, respectively, were included in the analysis at the 12-month follow-up. Error bars indicate 95% confidence intervals.

BMI

BMI (SD) was 26.6 (4.5) and 26.3 (4.4), respectively, at the first visit and at the 3-month follow-up for hip patients (n=1 384) and 28.4 (5.2) and 28.2 (5.1) for knee patients (n=4 020).

Sick leave, home care, use of joint-related medications, surgery and wanting surgery

At the first visit, a total of 173 (24.3%, 148 because of knee and 25 because of hip) had been on sick leave within the past year because of their joint, while 106 (14.9%, 69 because of knee and 37 because of hip) had been on sick leave because of their joint at the 12-month follow-up (n=711, excluding old-age pensioners and people on early retirement pension or disability pension).

A total of 153 (9.8%) received home care (gardening, cleaning, personal hygiene etc.) at the first visit, while 159 (10.2%) received home care at the 12-month follow-up (n=1 553).

At the first visit, 58.1% used either paracetamol, NSAID or opioids/opioid-like medications because of their hip osteoarthritis. At the 3-month follow-up, this was the case for 44.6% (n=1 385). At the first visit, 55.9% used either paracetamol, NSAID or opioids/opioid-like medications because of their knee osteoarthritis. At the 3-month follow-up, this was the case for 36.7% (n=4 023).

A total of 86 (14.5%) of the hip patients had had an artificial hip joint implant on the most painful side, while 17 (2.8%) of the hip patients had had an artificial knee or hip joint implanted in another joint (n=592) at 12 months. A total of 74 (4.9%) of the knee patients had had an artificial knee joint implant on the most painful side, while 29 (1.9%) of the knee patients had had an artificial knee or hip joint implanted in another joint (n=1 519) at 12 months.

As regards patients, whose data are available from the first visit and the 3-month follow-up (n=1 475), 11.7% reported that they would like to have hip surgery at the first visit, while this was the case for 13.5% at the 3-month follow-up. As regards patients, whose data are available from the first visit and the 12-month follow-up (n=592), 11.7% reported that they would like to have a hip surgery at the first visit, while this was the case for 15.4% at the 12-month follow-up.

As regards patients, whose data are available from the first visit and from the 3-month follow-up (n=4 200), 11.6% reported that they would like to have knee surgery at the first visit, while this was only the case for 9.5% at the 3-month follow-up. As regards patients, whose data are available from the first visit and the 12-month follow-up (n=1 518), 10.9% reported that they would like to have knee surgery at the first visit and this was also the case at the 12-month follow-up.

4.2. Compliance and satisfaction with GLA:D®

Compliance

Table 5 shows the compliance by participants in attending session 1, 2 and 3 of the GLA:D® patient education program. During the start-up phase, a GLA:D® unit may offer only session 1 and 2 of the patient education program, since session 3 must be conducted by a former GLA:D® patient, an osteoarthritis communicator; therefore, it is not possible to offer this session until after the first group of patients have completed the entire program. Due to the high number of newly established GLA:D® units, this number is expectedly low.

Patient education	No. of participants in per cent
Session 1	89.8%
Session 2	87.1%
Session 3	17.6%

Table 5. Compliance in attending GLA:D® patient education program (n=5 482)

Table 6 shows compliance with the GLA:D® group exercise program for hips and knees, respectively. Almost all patients chose to participate in the supervised group exercise program in stead of doing a home exercise program, and 84% of hip patients and 83% of knee patients participated in at least 10 supervised group exercise sessions.

No. of group-based exercise sessions	Percentage distribution hip	Percentage distribution knee
Did not participate in group exercise	2.7%	3.5%
1-6 sessions	3.4%	4.3%
7-9 sessions	9.5%	9.4%
10-12 sessions	47.8%	48.5%
More than 12 sessions	36.5%	34.2%

Table 6. Number of group-based exercise sessions for patients in the GLA:D® registry. A total of 1 385 hip and 4 023 knee patients were included in the analysis. Some patients have participated in more than 12 sessions despite the fact that GLA:D® involves only 12 sessions (twice a week for six weeks). This is due to the fact that the individual GLA:D® unit may offer more exercise sessions if they wish to do so.

The majority of GLA:D® patients made use of what they had learnt (from both patient education and exercise sessions) at least once a week. Table 7 includes a list of how often the new knowledge was applied.

How often is the new skills applied?	Percentage distribution hip 3/12 months	Percentage distribution knee 3/12 months
Never	2.8 %/7.8 %	2.4 %/7.0 %
Every month	1.8 %/8.3 %	1.7 %/11.7 %
Every week	43.1 %/48.4 %	39.1 %/40.7 %
Every day	41.1 %/28.1 %	43.1 %/31.4 %
Several times a day	9.7 %/5.1 %	12.3 %/7.4 %
Don't know	1.4 %/2.2 %	1.3 %/1.8 %

Table 7. How often do the patients use what they have learnt from GLA:D® (both patient education and exercise sessions). A total of 1 478 hip patients and 4 212 knee patients were included in the analysis after 3 months, while 591 and 1 522, respectively, were included in the analysis after 12 months. The response option 'Don't know' has been omitted from the registry.

Satisfaction with GLA:D®

A total of 93.3% of hip patients (n=1 478) and 92.3% of knee patients (n=4 212) in the GLA:D® registry were satisfied or very satisfied with GLA:D® after 3 months, while this was the case with 89.6% of hip patients (n=591) and 88.0% of knee patients (n=1 522) after 12 months.

A total of 0.8% and 1.3% were disappointed or very disappointed with GLA:D® after 3 and 12 months, respectively, which are rather low percentages. Nevertheless, this group of participants is the focus of our quality assurance efforts. Therefore, we monitor whether certain GLA:D® units have disappointed participants so that we can help those units improve their services.

5. Results 2015 – Patient characteristics at first visit to the physical therapist

This section presents the results from the GLA:D® registry for the first visit to the physical therapist from 29th January 2013 and up to and including 31st December 2015. The number of participants included in each analysis will be stated in the text or in brackets.

5.1. Demography and clinical characteristics prior to GLA:D®

Age

The average age (SD) of patients at the first visit was 64.4 (9.9) years (n=9 827), the youngest participant was 15 years old and the oldest was 94 years old (Figure 10). The average age of men was 64.8 years and the average age of women was 64.2 years. The average age of hip patients was 65.5 years and the average age of knee patients was 64.0 years.

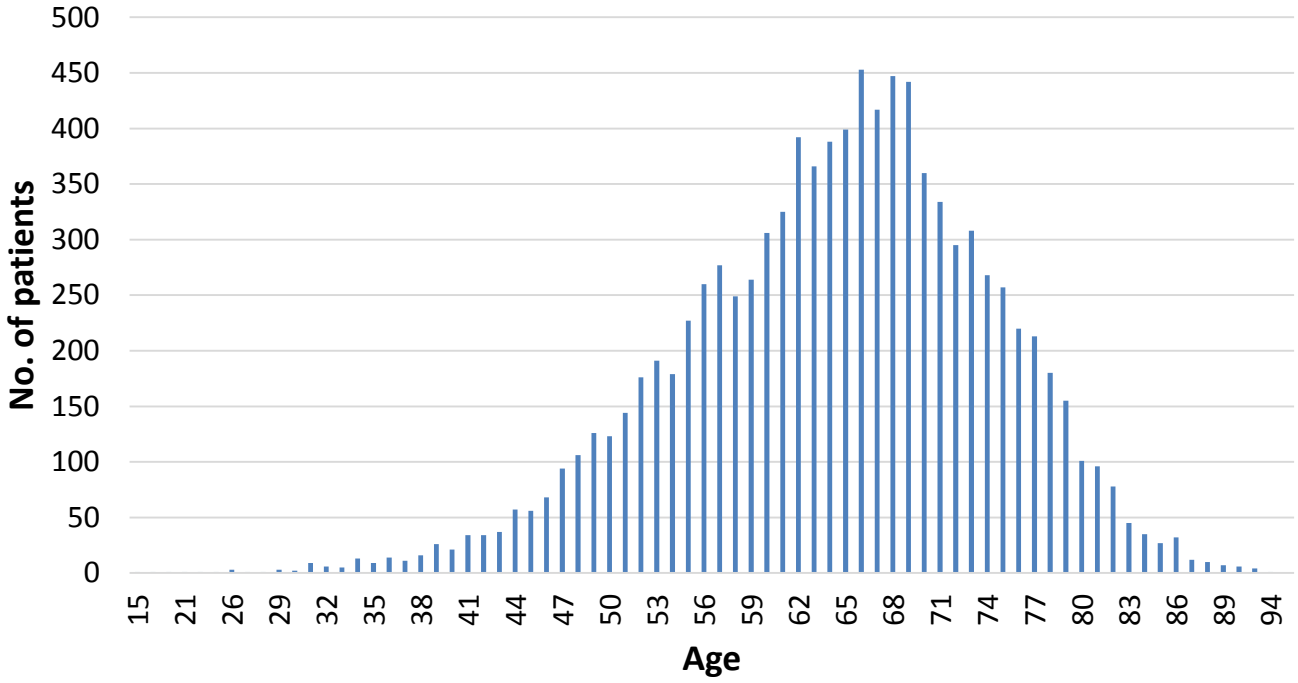


Figure 10. Age distribution in the GLA:D® registry. A total of 9 827 patients were included in the analysis.

Gender

A total of 7 247 women (74%) and 2 580 men (26%) are included in the GLA:D® registry. Among the women, 25.4% define hip osteoarthritis as their primary problem, while 74.6% define knee osteoarthritis as their primary problem. Among the men, 25.3% define hip osteoarthritis and 74.7% define knee osteoarthritis as their primary problem.

Marital status, nationality and education (n=8 968)

A total of 26% live alone, while the remaining 74% included in the GLA:D® registry live together with others. Some 97% of the GLA:D® patients are born in Denmark and 99% are Danish citizens. The distribution in relation to educational level is shown in table 8.

Highest educational level completed	Percentage distribution
Primary and lower secondary education	16 %
Upper secondary education	12 %
Short-term higher education	20 %
Medium-term higher education	40 %
Long-term higher education or higher	12 %

Table 8. Educational level in the GLA:D® registry. 8 968 patients are included in the analysis.

Smoking (n=8 558)

A total of 9.0% reported being smokers.

Home care (n=8 054)

A total of 11.0% reported that they receive home care (e.g. gardening, cleaning, personal hygiene etc.).

Sick leave and present job situation

Including only those related to the labor market (excluding old-age pensioners and people on early retirement pension or disability pension), 17.9% of hip patients (n=736) and 27.1% of knee patients (n=2 531) reported having been on sick leave during the past year because of their joint(s). A total of 59.1% of hip patients had been on sick leave for less than one month, 19.7% had been on sick leave for 1-3 months and the remaining 21.2% had been on sick leave for more than three months (n=132). A total of 63.5% of knee patients had been on sick leave for less than one month, 20.2% had been on sick leave for 1-3 months and the remaining 16.3% had been on sick leave for more than three months (n=687). The job situations of the patients included in the GLA:D® registry are listed in Table 9.

Present job situation	Percentage distribution hip	Percentage distribution knee
Employed/student	28 %	33 %
Full time sick leave	2 %	2 %
Part-time sick leave/flex job	2 %	3 %
Old-age pensioner	55 %	49 %
Unemployed	2 %	2 %
Early retirement	7 %	7 %
Disability pension	4 %	3 %

Table 9. Present job situation. 2 311 hip patients and 6 622 knee patients were included in the analysis.

Problems with other joints

Some 60% reported having problems with at least one other hip or knee joint in addition the one they defined as their primary problem (n=9 008).

Some 35% reported having problems with hand or finger joints in addition to their hip and/or knee osteoarthritis (n=8.989).

History of severe joint injury

A total of 34% of hip patients (n=1 606) and 56% of knee patients (n=4 699) had a history of previous injury to the joint in question which had made them consult their general practitioner.

Comorbidity

Figure 11 shows a list of patient-reported comorbidities.

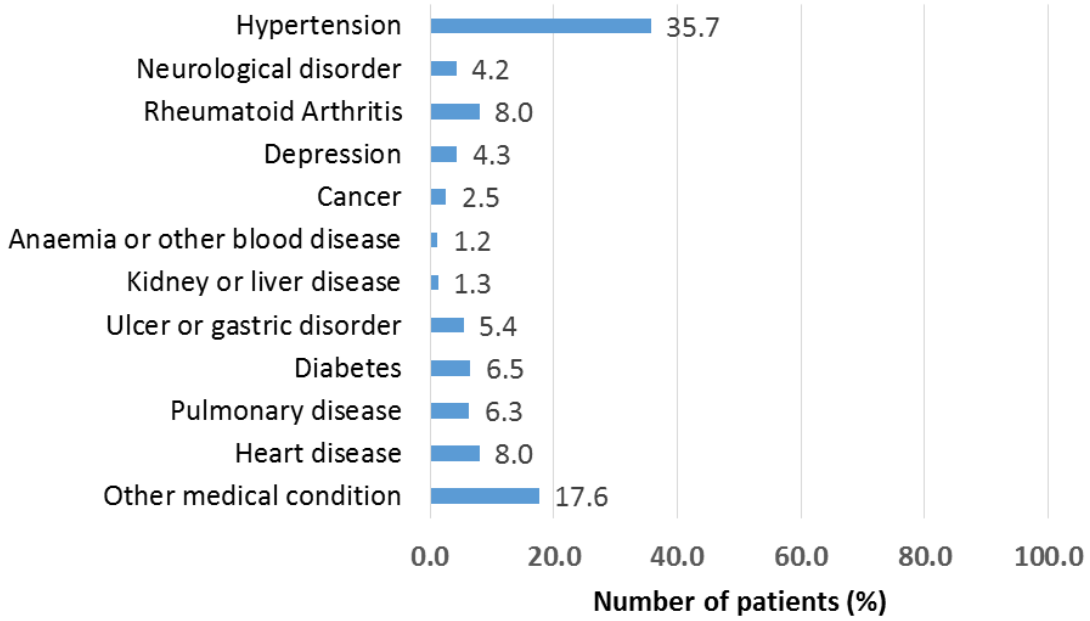


Figure 11. Comorbidity. A total of 7 186 patients were included in the analysis.

BMI

Average BMI (SD) for eveybody in the GLA:D® registry was 28.0 (5.1). For hip patients (n=2 492) it was 26.7 (4.6) and for knee patients (n=7.333) it was 28.4 (5.2). Table 10 shows the distribution.

Classification	BMI (kg/m^2)	Percentage distribution hip	Percentage distribution knee
Underweight	<18.5	0.8 %	0.5 %
Normal weight	18.5-24.9	39.5 %	27.1 %
Overweight	25-29.9	38.4 %	39.8 %
Obese	≥30	21.3 %	32.6 %

Table 10. BMI distribution in the GLA:D® registry. A total of 2 492 hip patients and 7 333 knee patients were included in the analysis.

Pain intensity, symptom duration and pain frequency

Hip patients (n=2 304) had an average pain intensity (VAS 0-100; SD) of 47.1 (21.8), with 0 being the lowest and 100 the highest. Knee patients (n=6 610) had an average pain intensity (SD) of 48.2 (22.0), with 0 being the lowest and 100 the highest (figure 12).

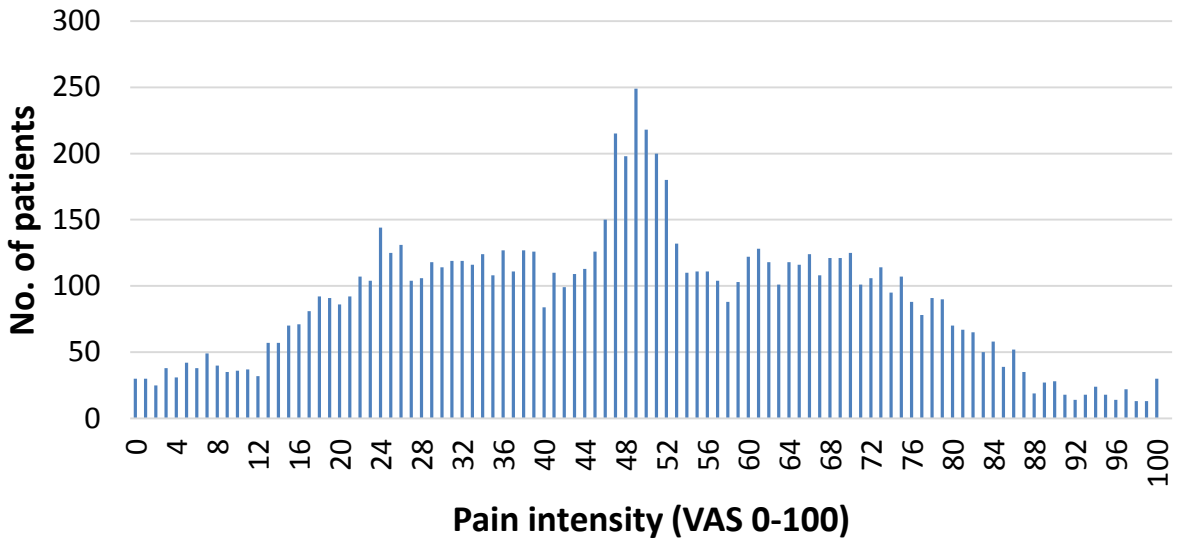


Figure 12. Distribution of pain in the GLA:D® registry. A total of 8 914 patients were included in the analysis.

Hip patients (n=2 479) had an average duration of symptoms of a little over three years (40.50 months, with the lowest being 0 and the highest 576 months), while knee patients (n=7 284) had an average duration of symptoms of 4.5 years (54.7 months, with the lowest being one and the highest 840 months).

A total of 82% of patients experienced pain every day or all the time prior to the program. Pain frequency for hip and knee patients is shown in table 11.

How often do you have pain?	Percentage distribution hip	Percentage distribution knee
Never	1 %	1 %
Every month	3 %	4 %
Every week	13 %	12 %
Every day	65 %	64 %
All the time	17 %	18 %

Table 11. Pain frequency in the GLA:D® registry. A total of 2 311 hip patients and 6 624 knee patients were included in the analysis.

Distribution of pain (new variable as of 12th April 2014)

Participants marked their pain during the past 24 hours on a figure of the human body. There are 26 areas on the front of the body and 30 on the back that may be indicated as painful. Figure 13 shows the percentage of the patients indicating each area of the body as painful at the first visit (n=7 683).

Pain was present in all other regions of the body than the hip/knee at various frequencies. For instance, 13% reported low back pain and 4.5% reported neck pain, while 7.4% experienced pain from the upper side of the foot.

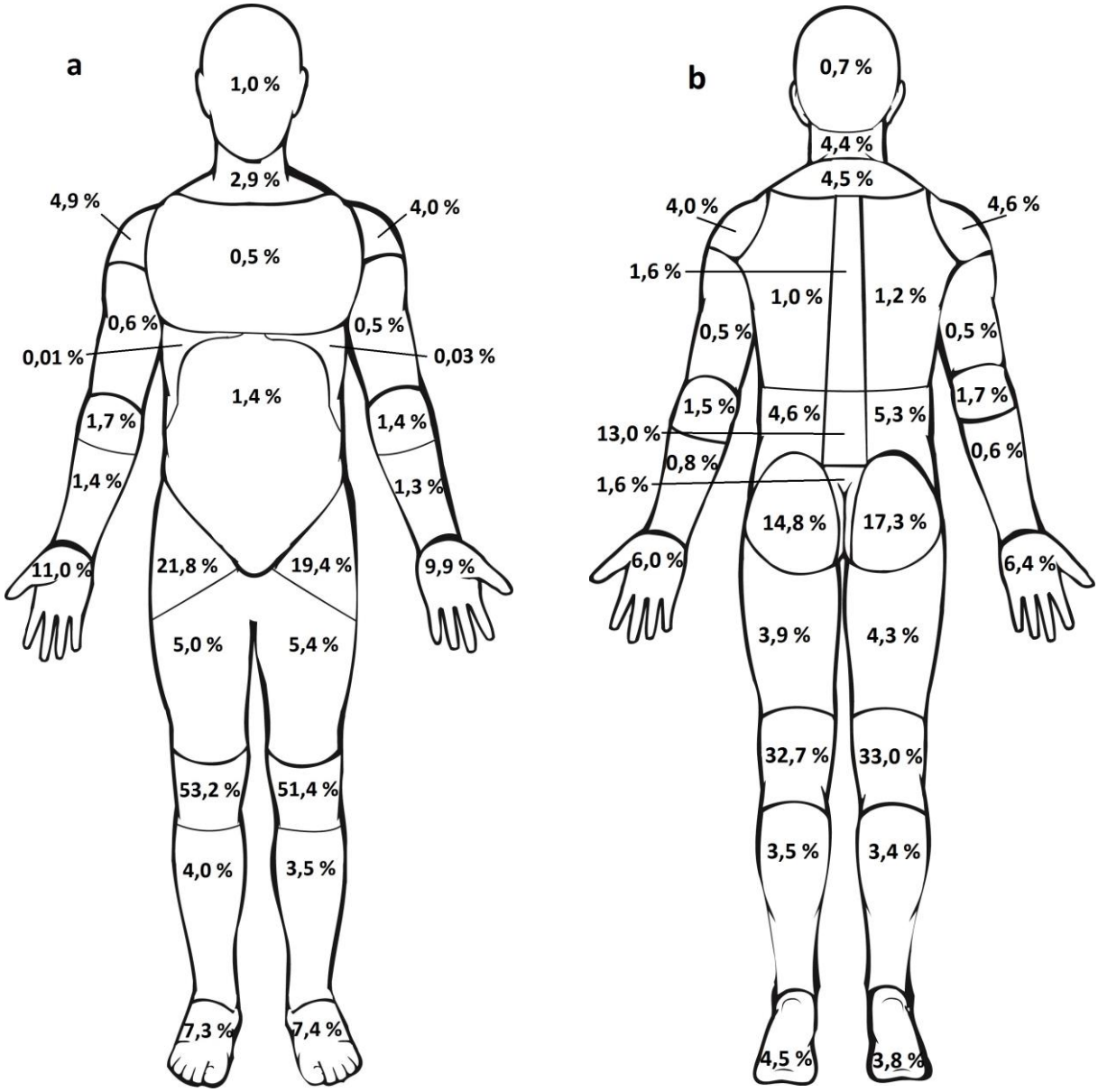


Figure 13. Distribution of pain. Areas on the front (Figure 13a) and the back (Figure 13b) of the body, where the participants had experienced pain during the past 24 hours prior to the first visit (n=7 683).

Fear avoidance, physical activity and exercise[2]

A total of 10.5% of hip patients (n=2 310) and 15.5% of knee patients (n=6 621) included in the GLA:D® registry indicated that before they joined GLA:D®, they were afraid that physical activity and exercise would be detrimental to their joints.

Figure 14 shows patients' self-reported hip/knee confidence. Only 12% of hip patients and 8% of knee patients felt that they had full confidence in their hip/knee prior to GLA:D®.

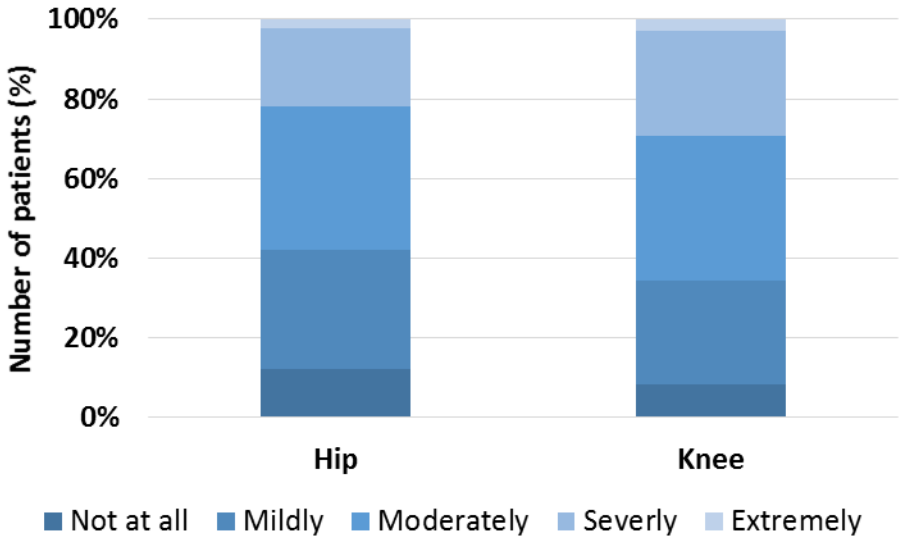


Figure 14. Hip/knee confidence. Answers to the question: " How much are you troubled with lack of confidence in your hip/knee?". A total of 2 309 hip patients and 6 617 knee patients were included in the analysis.

Prior to the program, 81% reported having walking problems as a result of their hip osteoarthritis (n=2 309) and 79% reported having walking problems as a result of their knee osteoarthritis (n=6 618).

[2] Physical activity and exercise are defined on the basis of the intention of the activity. Cycling or walking to work or the bus may thus be both exercise and physical activity. In GLA:D®, exercise is defined as an activity of moderate intensity, i.e. it makes you out of breath and sweaty, with the intention of improving your health, e.g. focusing on improving cardiorespirartory fitness or muscle strength). A quiet walk is thus defined as physical activity and not exercise. The questions refers to a typical week for the patient.

Table 12 shows how many days of the week the patients included in the GLA:D® registry are active for at least 30 minutes a day and thus meet the recommendations for physical activity by the National Board of Health. Prior to inclusion in the GLA:D® registry, 60% of the patients did not meet the recommendations.

No. of days	Percentage distribution hip	Percentage distribution knee
0	3.2 %	4.1 %
1	4.2 %	4.6 %
2	8.3 %	8.4 %
3	11.4 %	12.2 %
4	10.4 %	10.7 %
5	12.8 %	13.2 %
6	10.1 %	8.7 %
7	39.6 %	38.2 %

Table 12. Number of days of the week that patients in the GLA:D® registry are physically active for at least 30 minutes. A total of 2 309 hip patients and 6 613 knee patients were included in the analysis.

Table 13 shows how often patients exercised prior to the GLA:D® program to a degree that made them out of breath and sweaty.

How often	Percentage distribution hip	Percentage distribution knee
Never	14.2 %	14.4 %
Less than once a month	7.8 %	8.4 %
1-2 times a month	6.5 %	6.6 %
Once a week	19.5 %	19.7 %
2-3 times a week	36.6 %	36.3 %
4-6 times a week	11.0 %	10.4 %
Every day	4.3 %	4.2 %

Table 13. How often do the patients included in the GLA:D® registry exercise. A total of 2 309 hip patients and 6 618 knee patients were included in the analysis.

Results from the first visit for the University of California (UCLA) activity score, which goes from 1 (Wholly inactive (dependent on others, cannot leave residence)) to 10 (Regularly participates in impact sports), are shown in figure 15.

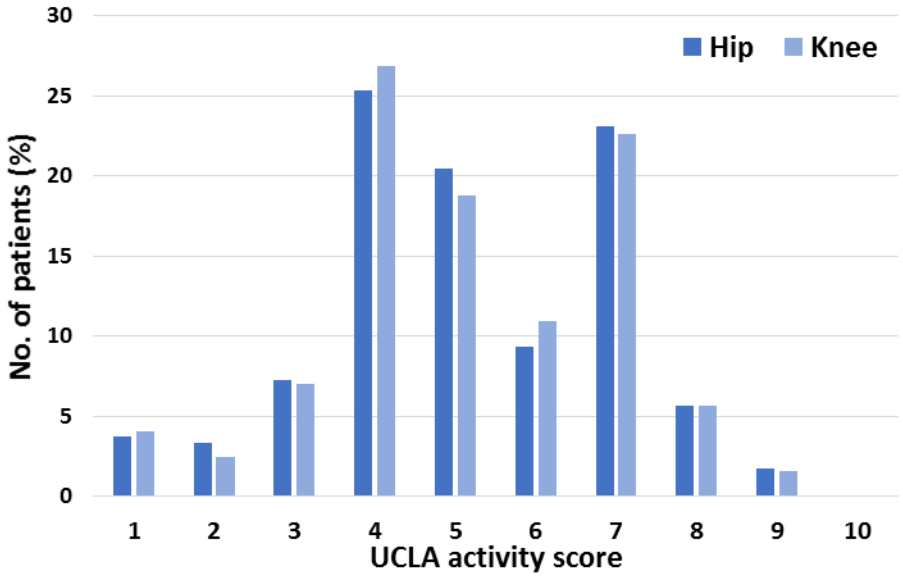


Figure 15. University of California (UCLA) activity score at first visit. 1=Wholly inactive; 2=Mostly inactive; 3= Sometimes participates in mild activities; 4= Regularly participates in mild activities; 5= Sometimes participates in moderate activities; 6= Regularly participates in moderate activities; 7= Regularly participates in active events; 8= Regularly participates in active events; 9=Sometimes participates in impact sports; 10=Regularly participates in impact sports. A total of 2 307 hip patients and 6 611 knee patients were included in the analysis.

Hip patients (n=2 339) completed the 40m walk test at a average (SD) of 28.7 (8.9) seconds and knee patients (n=6 853) at an average of 28.7 (8.8) seconds. A total of 3% of hip patients and 2% of knee patients used walking aids during the test. Table 14 shows percentiles for the 40m walk test. It may also be used to compare yourself or your patients with the patients of the GLA:D® registry.

	Percentiles (time in secs to walk 40 m)						
	5	10	25	50	75	90	95
Hip	19.8	21.0	23.5	27.0	31.7	38.0	43.0
Knee	19.6	21.0	23.6	27.0	31.6	37.8	42.8

Table 14. Percentiles for 40m walk test.[3] A total of 2 339 hip patients and 6 853 knee patients were included in the analysis.

The average number of chair stand repetitions in 30 seconds (SD) was 12.5 (3.9) for hip patients (n=2 339) and 12.1 (3.7) for knee patients (n=6 820). Table 15 shows percentiles for the 30-second chair stand test. It may also be used to compare yourself or your patients with the patients of the GLA:D® registry. A total of 1.1% of hip patients and 1.4% of knee patients were not able to complete the test; consequently, they performed a modified version using a chair with a seat

[3] How to read the table: If you or your hip patient completed the 40m walk test in e.g. 23.5 seconds, this time is just as good or better than 25% of the hip patients included in GLA:D®. You may thus use the table to look up how well you are doing compared with a large group of people with hip or knee osteoarthritis.

height of 44-47cms and with armrests. The average number of chair stand repetitions (SD) was 8.4 (3.3) for this group of hip patients (n=26) and 8.2 (4.7) for the knee patients (n=97).

	Percentiles (no. of chair stand repetitions in 30 s)						
	5	10	25	50	75	90	95
Hip	7	8	10	12	15	17	19
Knee	7	8	10	12	14	16	18

Table 15. Percentiles for 30-seconds chair stand test.[4] A total of 859 hip patients and 2 473 knee patients were included in the analysis.

Joint-related quality of life and self-efficacy

Joint-related quality of life (SD) for hip patients (HOOS QOL, n=2 308) was 47.3 (14.9) and for knee patients (KOOS QOL, n=6 617) it was 44.9 (14.5).

Self-efficacy (SD; ASES) was 67.1 (17.6) for hip patients (n=2 308) and for knee patients (n=6 617) it was 68.7 (17.2).

5.2. Prior examination and treatment

X-rays and explanation of hip/knee problem

The physical therapist asks the GLA:D® patients if they have had x-rays taken of the hip/knee joint and what the x-ray showed. A total of 86.7% of hip patients (n=2 479) and 85.0% of knee patients (n=7 299) indicated that they had had x-rays taken of their joints. Out of this group, 91.2% of hip patients and 90.4% of knee patients stated that the x-ray showed osteoarthritis.

The patients included in the GLA:D® register were asked what explanation they had received for their hip/knee problems. Their answers are shown in table 16.

Explanation	Percentage distribution hip	Percentage distribution knee
Wear and tear	35 %	40 %
Joint failure	1 %	1 %
Osteoarthritis with no explanation	24 %	22 %
Osteoarthritis with an explanation	21 %	22 %
No explanation	19 %	15 %

Table 16. Previous explanation for hip/knee problems. 'Explanation' refers to whether the patient had received information on risk factors, treatment options, self-help strategies etc. A total of 2 492 hip patients and 7 332 knee patients were included in the analysis.

[4] How to read the table: If you or your knee patient completed e.g. 14 chair stand repetitions in 30 seconds, this is just as good or better than 75% of the knee patients included in GLA:D®. You may thus use the table to look up how well you are doing compared with a large group of people with hip or knee osteoarthritis.

Prior physical therapy interventions, advice on the importance of exercise and weight loss as well as the use of aids

The number of hip and knee patients who have received advice on the importance of exercise, advice on weight loss or have received some form of physical therapy prior to GLA:D® is shown in figure 16.

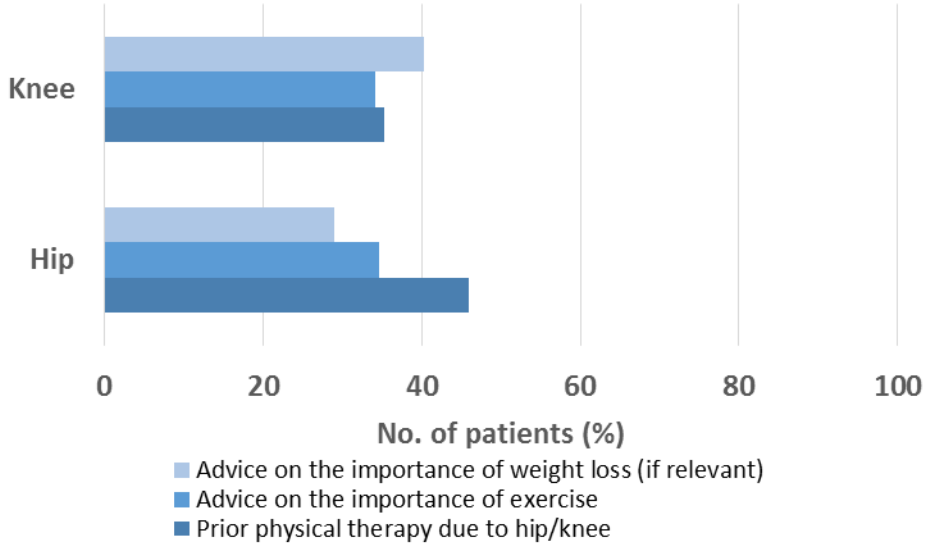


Figure 16. Previous physical therapy and advice on the importance of exercise and weight loss. Advice on weight loss includes only those to whom weight loss is relevant. A total of 2 492 (1 530) hip patients and 7 333 (5 423 for weight loss) knee patients were included in the analysis.

A total of 10% of hip patients (n=2 492) and 12% of knee patients (n=7 333) have used or use a walking aid.

A total of 5% of hip patients (n=2 491) and 8% of knee patients (n=7 322) use other types of aids.

Joint-related medications

At the first visit, 59.3% of hip patients (n=2 492) and 55.7% of knee patients (n=7 333) reported having used either paracetamol, NSAID or a opioids/opioids-like medications within the past three months due to their joint.

At the first visit, 17.6% of hip patients (n=2 492) and 19.9% of knee patients (n=7 333) reported having used herbal medicine or dietary supplement (including Glucosamine) within the past three months due to their joint.

Surgery of the most troubled joint, surgery of another joint and wanting surgery

A total of 3.7% of hip patients (n=2 491) reported having had surgery of their hip in the past, while 31.7% of knee patients (n=7 333) reported having had surgery of their knee in the past.

A total of 23.1% of hip patients (n=935) and 22.2% of knee patients (n=7 333) reported having had surgery of at least one other knee or hip joint besides the joint they are having most problems with at the moment.

A total of 12% of hip patients (n=2 306) and 12% of knee patients (n=6 612) reported having so many problems with their hip/knee that they would like to have surgery now if it were up to them.

6. Results 2015 - at GLA:D® unit level

This section presents the results from the GLA:D® registry for each GLA:D® unit from the entry of the first patients on 29th January 2013 and up to and including 31st December 2015. The results from the individual units are not directly comparable as patients are not comparable across the GLA:D® units.

Patients are heterogeneous in terms of age, gender, BMI, education and exercise as stated in table 17. Where data are missing, no results are available from patients at this point. Participation in patient education sessions is calculated as number of sessions out of the three possible sessions (two conducted by a physical therapist, one conducted by a former GLA:D® participant). Participation in supervised training sessions is calculated as: 1=Did not participate in supervised training session; 2=1-6 training sessions; 3=7-9 training sessions; 4=10-12 training sessions; 5=More than 12 training sessions.

Table 18 shows results for the 3-month follow-up on how often patients use their new skills, satisfaction with GLA:D®, change in pain and change in 40m walk test for GLA:D® units that have data for at least 20 patients on change in pain. Where data are missing, no results are available from patients at this point. Patients may choose from the following response categories when answering the question how often they make use of their new skills learned in GLA:D®: 1=Never; 2=Every month; 3=Every week; 4=Every day; 5=Several times a day. Patients may choose from the following response categories when stating how satisfied they are with GLA:D®: 1: Very dissatisfied; 2=Dissatisfied; 3=Neutral; 4=Satisfied; 5=Very satisfied.

Table 17. Characteristics of patients at first visit and median participation in patient education sessions and supervised exercise sessions for all GLA:D® units. The clinics that have contributed data to the registry are listed (n=227). See explanation at the beginning of this section.

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
A-FYS Solrød Strand	67.5	10	28	28.5	2	4
Aktiv fysioterapi og træning Nykøbing F	65.6	12	39	29.6	2	4
Algade Fysioterapi	64.9	4	15	27.9	2	4
Alléens Fysioterapi	64.8	11	34	26.9	3	4
Allerød Fysioterapi & Træning	67.9	8	21	27.6	0	5
Alsidig Fysioterapi	62.7	7	29	27.9	2	4
Ambulant Genoptræning Syddjurs	65.3	0	4	27.2	2	4
Arden Fysioterapi	62.9	12	26	28.9	2	5
Arkaden	62.8	85	239	27.9	3	5
Artrose Fys	62.2	22	69	26.7	1	4
Asnæs Fysioterapi & Træning	61.6	1	8	26.8		
Assensklinikken	68.9	14	38	27.7	3	4
Astro Fysioterapi Slagelse	63.6	9	37	28.8	2	5
Axeltorv Fysioterapi	66.3	14	70	26.3	2	5
Bagsværd Fysioterapi & Træning	69.4	7	12	26.4		
Ballerup Fysioterapi og Træningscenter	65.6	25	65	27.2	2	5
Beder Fysioterapi	66.0	15	32	26.8	2	4
BeneFIT Dronningelund	63.6	54	122	28.0	2	4
BeneFiT Frederikshavn	63.9	8	36	28.1	1	4
BeneFiT Hobro	63.6	41	72	29.7	2	4
BeneFiT Højbjerg	66.5	2	9	30.3	2	5
BeneFIT Odense	65.3	4	4	29.4		
BeneFiT Rudkøbing	69.3	3	10	27.8	2	5
Benefit Skørping	64.9	2	12	27.8	2	5
BeneFIT Sæby Fysioterapi	66.8	5	17	28.9	2	4

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
BeneFiT Viborg Fysioterapi & Træning	64.1	22	47	27.5	2	5
Birkerød Fysioterapi & Træningscenter	68.1	19	68	25.9	2	5
BISTRUP FYSIOTERAPI	67.9	4	15	27.2	2	4
Bramming Fysioterapi	62.0	18	47	29.2	2	4
Bramsnæs Fysioterapi	62.5	6	8	28.5	2	4
Bredballe Fysioterapi	68.6	2	5	26.5		
Bredgade Fysioterapi - Roskilde	68.0	0	1	33.3	0	2
Brøndbyøster Fysioterapi	65.5	5	11	31.3	2	4
Brønderslev Fysioterapi og Genoptræningscenter	60.2	8	48	29.6	2	4
Brønshøj Fysioterapi og Træningscenter	65.8	5	25	275	2	5
Brørup Fysioterapi og Træning	66.4	6	28	29.2	2	5
Buddingevej Fysioterapi	65.4	41	176	27.0	2	5
Bülowsvej Fysioterapi & Træning Aps	66.7	12	37	26.9	2	5
Børkop fysioterapi og træning	70.2	2	4	25.6	2	4
Center for Fysioterapi – Gribskov	64.0	4	5	27.8	3	4
Center for Fysioterapi og Akupunktur, Aabenraa	64.1	44	112	28.6	2	3
Center for Fysioterapi og Træning Helsinge	62.2	16	36	26.2	3	5
Center for Fysioterapi og Træning Horsens	62.6	28	88	27.9	2	4
Center for Fysioterapi og Træning, Munkebo	66.3	9	40	29.9	2	5
Centrum Fysioterapi Viborg	66.0	0	25	26.4	2	4
Centrum Fysioterapi, Odense	62.6	0	9	26.5	0	1
Charlottehøj Fysioterapi	64.8	18	97	27.0	2	2
Christiansgade Fysioterapi & Træning	56.0	0	1	27.8		
Dalum Fysioterapi & Idrætsklinik	63.0	12	17	28.7	2	5

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
Egedal Kommune	65.2	22	34	29.8	2	4
Esbjerg Fysioterapi	63.1	17	67	27.3	2	4
Espergærde Fysioterapi	70.0	1	3	24.2	2	4
Farsø Fysioterapi	67.3	10	5	28.2		
Fredensborg Sundhedscenter	68.1	12	32	26.6	2	5
Fredericia Fysioterapi	68.5	1	12	27.0	2	5
Frederiksberg Sundhedscenter	64.0	0	1	25.6		
FREDERIKSBJERG FYSIOTERAPI	66.5	3	12	25.2	3	4
Frederikssund Fysioterapi	67.5	3	16	30.2	2	5
Frederikssund Kommune	60.2	20	33	29.1	2	3
Furesø Fysioterapi	67.7	14	51	26.4	2	4
Fussingø Fysioterapi & Træning	67.3	4	8	28.2	2	4
FysHuset	65.2	11	59	28.9	2	5
Fysikken, Ringsted	58.3	0	4	27.2	2	4
Fysio Silkeborg	63.5	25	66	27.5	2	4
Fysio Sønderland	63.9	20	86	27.6	2	4
Fysiocenter Helsinge	67.4	22	60	26.0	2	5
Fysiocenter Roskilde	64.9	8	46	27.6	2	5
FysioCenter Varde	61.9	1	6	29.3		
Fysiocenter Vejle	63.0	25	72	27.5	1	5
Fysiocenter Aarhus	63.0	25	65	26.5	2	3
Fysiocenter Aarhus N	66.3	9	27	27.2	2	5
Fysiokiss	62.9	3	10	28.6	2	5
Fysioklinik Snedsted	63.1	1	13	27.5	2	5
Fysiosyd	67.2	1	4	28.0		
Fysioteam & Ejby Fysioterapi	64.1	7	44	28.0	2	4
Fysioteam Midtlolland	64.3	17	31	28.1	3	5
Fysioterapeut Kristoffer Rask Espensen	72.0	1	1	34.1	2	4
Fysioterapeut Mie Maimann Møller	62.7	3	4	28.6		

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
Fysioterapeuterne Esbjerg	65.5	3	7	26.5	3	5
Fysioterapeuterne i Skive	66.2	1	5	25.2	2	4
Fysioterapeuterne Lystrup Centervej	62.6	6	14	28.2	2	4
Fysioterapeuterne Sundhedens Hus	65.9	8	11	27.9	2	4
Fysioterapeutisk Specialistteam i Risskov	64.2	13	54	26.9	2	4
Fysioterapi & Træningsklinik Frederiksberg	63.7	24	97	26.6	2	5
Fysioterapi Behandlings- og træningscenter Lemvig	64.0	10	43	29.3	2	4
Fysioterapi Herlev	68.8	0	6	30.9	1	2
Fysioterapi Kalundborg	71.4	5	6	28.0	2	4
Fysioterapi NordVest	63.8	4	18	28.8	2	4
Fysioterapi v/Nels Asmussen	54.3	1	2	24.8		
Fysioterapien Færch Huset - Holstebro	62.4	3	7	28.0		
Fysioterapien Gudme	65.1	11	23	28.2	3	4
Fysioterapien Horsens Sundhedshus	62.2	8	15	30.1	1	4
Fysioterapien i Centrum	68.8	3	14	29.8	2	5
Fysioterapien i Jels	58.0	8	39	28.3	2	4
Fysioterapien Lyngby Storcenter	66.8	4	12	26.5		
Fysioterapien Sct. Jørgen - Holstebro	66.3	0	6	28.9	2	5
Fysioterapien Skive	63.5	43	123	28.7	2	4
Fysioterapien.dk - Ballerup	69.7	7	17	26.5	2	4
FYSIOVEJEN	64.6	10	52	27.6	2	4
Fysiq Dragør	69.5	3	15	28.7	0	5
FYSIQ Engvej	64.6	5	6	28.1	2	5
FYSIQ Tårnby	64.5	28	108	28.0	2	5
Fysium	62.3	4	16	28.8	2	4
Fysserne	79.0	0	1	30.5		

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
Faaborg Fysioterapi & Træningscenter	66.3	55	110	28.1	2	5
Galten Fysioterapi & Træning	64.1	19	42	27.8	2	3
Genoptræning - Allerød Kommune	63.9	4	3	25.9	1	4
Gentofte Fysioterapi & Træningscenter	64.6	6	10	25.4	1	4
Gentofte Kommune - Tranehaven	70.8	13	40	27.2	2	5
Gigtforeningens oplysningskreds Thisted (GOK)	62.6	1	17	28.6	2	5
Gilleleje Fysioterapi	66.5	7	24	27.1	2	4
Glostrup Fysioterapi & Træning	65.1	19	69	27.3	2	5
Grenå Fysioterapi og Træningsklinik	65.9	17	51	27.8	2	5
Gudenådalens Fysioterapi	66.7	17	37	26.9	2	4
Hartvigsen og Hein - Rygcenter og Idrætsklinik	63.0	12	63	26.3	2	4
Haslev Fysioterapi	65.7	20	73	28.7	2	5
Hasseris Fysioterapi og Motionscenter	65.8	7	16	26.7	2	4
Hedensted Kommune – Sundhedsfremme, Forebyggelse & Træning	58.6	4	15	31.0	2	3
Herlev Fysioterapi & Træningsklinik	65.1	8	43	26.8	2	5
Hillerød fysioterapi & træningscenter	61.3	18	54	26.0	2	5
Hjørring Kommune	63.0	48	74	28.9	2	5
Hornslet Fysioterapi	62.6	1	16	30.0	1	4
Hvalsø Fysioterapi	65.4	6	12	28.2		
Hvidovre Kommune	61.4	15	45	32.0	2	4
Hørsholm Fysioterapi & Rygcenter	67.3	2	2	27.0	2	4
Ikast Fysioterapi & Træning	63.1	6	16	28.7	2	4
Ishøj Fysioterapi	65.0	11	56	27.7	0	4
Kirkeby Fysioterapi og Træningsklinik	66.5	3	8	27.1	2	4

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
Kiropraktorerne Valby	58.5	2	8	28.7	2	4
Kjellerup Fysioterapi og Træning	58.9	1	7	27.1	2	5
Klinik for Fysioterapi - Sct. Josephs Hospital	65.3	5	9	28.1		
Klinik for Fysioterapi & Træning, Esbjerg	64.4	11	29	29.4	2	4
Klinik for Fysioterapi Holbergsgade 13	62.4	6	19	27.3	2	4
Klinik for Fysioterapi i Rødding	60.3	0	3	36.2		
klinik for fysioterapi i Tønder	62.3	10	28	28.4		
Klinik for Fysioterapi Kibæk	61.9	24	62	28.5	2	4
Klinik for fysioterapi Nybøl	66.3	18	26	27.2	3	5
Klinik for Fysioterapi og Træning - Esbjerg	60.2	6	23	27.7	2	4
Klinik for fysioterapi og træning - Silkeborg	64.8	3	13	27.1	1	4
Klinik for Fysioterapi og Træning i Vinderup	70.7	0	6	29.4		
Klinik for Fysioterapi og Træningscenter – Kolding	65.8	3	17	27.3		
Klinik for fysioterapi Ry	62.9	2	9	29.2	2	5
Klinik for Fysioterapi Sindal	60.2	8	29	27.4	2	4
Klinik for Fysioterapi, Give	64.1	5	28	29.0	2	4
Klinik for Fysioterapi, Tørring	66.5	10	17	28.4	2	4
Klinik for Fysioterapi, Aabybro	69.3	0	4	27.5		
Klinikken Munkebo	62.7	15	23	31.4	2	4
Kolding Fysioterapi og Træningsklinik	60.8	64	154	27.9	2	5
Køge Nord Fysioterapi	67.6	9	29	28.8	3	5
LRM Fysioterapi	66.3	4	5	26.7		
LS Fysioterapi & Træning	64.2	8	10	28.9	3	4
Løgstør Fysioterapi	66.7	8	15	28.9	2	4
Middelfart fysioterapi	64.0	13	46	28.4	2	4

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
Midtbyens Fysioterapi	62.1	10	22	30.0	2	4
Midtjysk Fysioterapi	62.8	23	115	28.3	3	4
MidtVest Osteopati & Fysioterapi	62.4	10	27	29.4	2	4
Morsø Fysioterapi	59.3	12	20	29.0	3	5
Møllebakkens fysioterapi	66.3	1	13	28.8	2	4
Mårslet Fysioterapi	62.6	4	12	28.4	2	4
Norddjurs Fysioterapi	73.8	2	6	26.8	2	5
Nordthy Klinik for Fysioterapi	65.0	6	15	27.2	3	4
Nyborg Fysioterapi og træning	64.4	11	29	29.4	3	5
Næstved Fysioterapi & Træningsklinik	63.7	20	38	30.3	2	4
Næstved Rygcenter	65.1	0	7	24.4	2	4
Nørager Fysioterapi	62.0	26	50	29.4	2	4
Nørresundby Torv Fysioterapi	62.4	15	27	28.6	2	4
Odder Fysioterapi	64.8	15	56	27.3	2	5
Odense Fysioterapi, Idrætsklinik og Fitness	62.8	24	68	28.9	2	4
Odense Kommune	66.5	8	12	27.2	2	5
Ortopædkir. afd. Horsens	61.7	3	4	27.8	2	4
Otterup Fysioterapi & Træningsklinik	67.0	13	19	28.7	2	4
Præstø Fysioterapi	62.6	0	9	30.8	2	5
Pulsens Fysioterapi	64.0	7	5	26.4	2	4
Randers Fysioterapi og Træningscenter	64.9	33	80	28.1	2	5
Regstrup Fysioterapi	66.6	9	24	28.1	2	5
Ringe Fysioterapi	66.0	6	22	27.5	2	4
Ringkøbing-Skjern Kommune	65.5	17	57	27.5	3	4
Ringsted Fysioterapi & Sportsklinik	65.2	8	35	27.2	2	4
Risskov Fysioterapi	67.3	5	14	27.1	2	4
Roskilde Kommune	66.1	88	181	28.3	2	4
Rungsted Fysioterapi og Træning	67.2	11	37	27.2	2	4

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
Ryg- og Genoptræningscenter København	61.8	27	52	28.1	3	4
Rødekro Fysioterapi	64.7	8	12	29.0		
Rødovre Centrums Fysioterapi	66.8	10	39	27.5	1	5
Rødovre Fysioterapi & Træning	63.5	18	46	29.1	2	5
Rønnebær Allé Fysioterapi - Helsingør	64.0	0	6	27.0		
Silkeborg Fysioterapi og Træning	60.2	11	19	25.9	2	4
Skanderborg Fysioterapi	64.0	4	17	27.7	2	4
Skanderborg Sundhedscenter	66.9	25	61	27.8	2	4
Skodsborg Fysioterapi	71.0	1	1	25.7		
Skælskør Fysioterapi & Træning	65.7	6	25	27.8	2	5
Skødstrup Fysioterapi	66.0	18	37	26.7	2	5
Slagelse Kommune	57.3	11	38	30.2	2	4
Sofiendal Fysioterapi og Kiropraktik	63.0	6	9	29.8	1	1
Stenløse Fysioterapi	65.2	6	5	29.4	0	4
Storvorde Fysioterapi	63.8	1	11	26.8	2	4
Sundhedscentrets Fysioterapi & Træningscenter I/S	63.0	11	24	28.6	3	5
Sundhedshuset Kolind	65.2	17	24	29.0	3	2
Sundhedshusets Fysioterapi	57.5	4	11	27.6	2	4
Sydthy klinik for fysioterapi	67.2	3	14	28.3	2	5
Søndersø Fysioterapi & Fitness	60.8	1	8	26.5	2	5
Them Fysioterapi	60.1	5	14	28.9	2	4
Thyholm Fysioterapi	60.7	4	11	26.0	2	5
Tidens Kiropraktor	57.1	9	15	26.9	2	4
Tommerup Fysioterapi	64.3	15	35	28.3	2	4
Ulfborg klinik for fysioterapi	68.0	0	1	26.4	0	1
Vanløse Fysioterapi	62.8	9	27	27.7	2	5

GLA:D® unit	Age at start	Gender (No.)		BMI	Education	Supervised exercise
	Mean	Male	Female	Mean	Median	Median
Varde Fysioterapi & Træningscenter	59.0	9	24	27.4	3	5
Vejen Fysioterapi	66.7	4	3	27.1		
Vejen Idrætscenter og Danhostel Sport	66.4	2	5	29.4		
Vejgaard Fysioterapi	67.1	9	23	28.2	2	4
Viborg Fysioterapi	65.5	6	8	28.6	3	5
VibyFysioterapi.dk	65.8	8	24	29.5	2	4
Videbæk Fysioterapi	70.1	2	5	25.4		
Vissenbjerg Fysioterapi & Idrætsklink	64.2	8	17	30.5	2	5
Vojens Fysioterapi & Træning	62.3	10	38	27.6	2	4
Ølstykke Fysioterapi	65.4	19	33	28.3	3	5
Ørum Fysioterapi & Træningscenter	68.5	9	14	28.2	2	4
Østerbro Fysioterapi	64.8	31	126	26.3	3	5
Østervrå Fysioterapi	62.8	8	18	30.0	2	4
Aabenraa Fysioterapi & Træning	62.7	14	23	27.6	2	4
Aalborg Fysioterapi	64.3	47	75	27.7	2	5
Aalborg Kommune, Træningsenhed Nord	66.9	22	32	29.6	2	4
Aalborg Kommune, Træningsenhed øst	67.5	14	37	28.8	2	4
Aalborg Kommune, Træningsenheden Vest	69.7	20	57	28.0	2	4
Aalestrup Fysioterapi	42.0	0	1	20.7	1	4
Aars fysioterapi og Træningscenter	52.0	0	2	35.9		
Årslev Fysioterapi	65.6	13	14	29.2	2	5

Table 18. Results for the 3-month follow-up on how often patients use their new skills, satisfaction with GLA:D®, change in 40m walk test and change in pain for GLA:D® units that have data for at least 20 patients on change in pain (n=98). See explanation at the beginning of this section.

GLA:D® unit	Participation Median	Satisfaction Median	Change in pain Mean	Change in 40m walk test Mean
A-FYS Solrød Strand	3	4	-16.7	
Aktiv fysioterapi og træning Nykøbing F	3	4	-6.0	-1.3
Alléens Fysioterapi	3	5	-8.9	-2.1
Alsidig Fysioterapi	4	4	-13.6	-6.4
Arden Fysioterapi	4	5	-17.8	-1.0
Arkaden	4	5	-16.2	-2.6
Artrose Fys	4	5	-12.7	-7.6
Assensklinikken	4	5	-5.0	-5.3
Astro Fysioterapi Slagelse	3	5	-11.0	-2.3
Axeltorv Fysioterapi	4	5	-7.1	-2.2
Ballerup Fysioterapi og Træningscenter	4	5	-8.2	-2.4
Beder Fysioterapi	3	5	-12.1	-2.4
BeneFIT Dronningelund	4	5	-15.5	-1.6
BeneFiT Hobro	4	5	-17.2	-1.3
BeneFiT Viborg Fysioterapi & Træning	3	4	-10.8	-.2
Birkerød Fysioterapi & Træningscenter	4	5	-11.2	-2.2
Bramming Fysioterapi	3	5	-7.2	-1.4
Brønderslev Fysioterapi og Genoptræningscenter	4	5	-11.3	-1.7
Brørup Fysioterapi og Træning	3	4	-10.7	-.4
Buddingevej Fysioterapi	4	5	-16.7	-2.7
Center for Fysioterapi og Akupunktur, Aabenraa	4	5	-11.7	-2.3
Center for Fysioterapi og Træning Helsinge	3	5	-13.5	-2.3
Center for Fysioterapi og Træning Horsens	4	5	-9.3	-1.6
Center for Fysioterapi og Træning, Munkebo	4	5	-11.0	-3.6
Charlottehøj Fysioterapi	4	5	-16.2	-.9
Egedal Kommune	3	5	-9.3	-2.8
Esbjerg Fysioterapi	4	5	-12.0	-1.6
Fredensborg Sundhedscenter	4	5	-2.5	-2.7
Frederikssund Kommune	4	5	-11.1	-3.6
Furesø Fysioterapi	4	5	-12.3	-1.2
FysHuset	4	5	-12.3	-2.3
Fysio Silkeborg	3	5	-15.3	-3.5

GLA:D® unit	Participation Median	Satisfaction Median	Change in pain Mean	Change in 40m walk test Mean
Fysio Sønderland	4	4	-13.8	-2.1
Fysiocenter Helsinge	4	4	-10.7	-1.4
Fysiocenter Roskilde	4	5	-14.0	-3.4
Fysiocenter Vejle	4	5	-23.6	-3.8
Fysiocenter Aarhus	4	5	-7.5	-3.1
Fysiocenter Aarhus N	4	5	-18.2	-4.0
Fysioteam & Ejby Fysioterapi	4	5	-16.1	-4.0
Fysioteam Midtlolland	3	5	-9.9	-1.2
Fysioterapeutisk Specialistteam i Risskov	4	5	-13.4	-2.6
Fysioterapi & Træningsklinik Frederiksberg	3	4	-8.0	-2.0
Fysioterapi Behandlings- og træningscenter Lemvig	3	4	-20.1	-0.3
Fysioterapien i Jels	4	5	-19.7	-2.4
Fysioterapien Skive	3	5	-15.9	-1.0
FYSIOVEJEN	4	5	-12.9	-1.3
FYSIQ Tårnby	4	5	-17.4	-3.7
Faaborg Fysioterapi & Træningscenter	4	5	-8.2	-1.5
Galten Fysioterapi & Træning	3	4	-12.8	-1.3
Gentofte Kommune - Tranehaven	4	5	-15.9	-3.0
Glostrup Fysioterapi & Træning	3	5	-8.7	-2.2
Grenå Fysioterapi og Træningsklinik	4	5	-16.9	-2.4
Gudenådalens Fysioterapi	3	4	-3.5	-3.5
Hartvigsen og Hein - Rygcenter og Idrætsklinik	4	5	-20.2	-2.6
Haslev Fysioterapi	4	5	-9.5	-3.1
Herlev Fysioterapi & Træningsklinik	3	4	-9.3	-3.0
Hillerød fysioterapi & træningscenter	3	5	-4.5	-2.5
Hjørring Kommune	4	5	-13.6	-3.0
Hvidovre Kommune	4	5	-15.3	-2.8
Ishøj Fysioterapi	3	5	-8.4	-2.0
Klinik for Fysioterapi Kibæk	3	5	-11.9	-2.4
Klinik for fysioterapi Nybøl	3	5	-8.3	-1.0
Klinik for Fysioterapi Sindal	4	5	-18.2	-2.8
Klinik for Fysioterapi, Give	4	5	-10.7	-5.7
Klinikken Munkebo	3	5	-16.2	-2.2
Kolding Fysioterapi og Træningsklinik	4	5	-15.7	-4.2
Køge Nord Fysioterapi	4	5	-9.1	-2.2
Middelfart fysioterapi	3	5	-7.9	-9.7
Midtbyens Fysioterapi	4	5	-13.7	-2.1

GLA:D® unit	Participation Median	Satisfaction Median	Change in pain Mean	Change in 40m walk test Mean
Midtjysk Fysioterapi	4	5	-15.2	-1.6
MidtVest Osteopati & Fysioterapi	3	4	-5.7	-1.6
Næstved Fysioterapi & Træningsklinik	4	5	-19.5	-1.4
Nørager Fysioterapi	4	5	-22.5	-5.8
Nørresundby Torv Fysioterapi	4	4	-17.0	-3.8
Odder Fysioterapi	3	5	-13.1	-2.0
Odense Fysioterapi, Idrætsklinik og Fitness	4	5	-19.8	-2.6
Randers Fysioterapi og Træningscenter	4	5	-10.5	-2.4
Regstrup Fysioterapi	4	4	-26.7	-3.0
Ringkøbing-Skjern Kommune	4	5	-13.2	-1.6
Roskilde Kommune	4	5	-14.9	-2.1
Rungsted Fysioterapi og Træning	3	5	-7.0	-1.5
Ryg- og Genoptræningscenter København	4	5	-19.1	-2.8
Rødovre Fysioterapi & Træning	4	5	-5.5	-1.4
Silkeborg Fysioterapi og Træning	3	5	-10.4	-1.3
Skanderborg Sundhedscenter	4	5	-7.5	-1.0
Skødstrup Fysioterapi	4	5	-9.3	-3.1
Slagelse Kommune	4	5	-22.8	-4.8
Sundhedshuset Kolind	4	5	-11.8	-1.6
Tommerup Fysioterapi	4	5	-19.7	-1.2
Vojens Fysioterapi & Træning	4	5	-12.6	-2.0
Ølstykke Fysioterapi	3	4	-15.3	-4.3
Østerbro Fysioterapi	4	5	-10.1	1.9
Aalborg Fysioterapi	4	4	-13.5	-1.6
Aalborg Kommune, Træningsenhed Nord	4	4	-11.0	.2
Aalborg Kommune, Træningsenhed øst	4	5	-14.2	-2.4
Aalborg Kommune, Træningsenheden Vest	4	5	-9.3	-4.0

7. Other GLA:D® activities

Visit www.glaid.dk for further information on GLA:D®.

In 2015, two GLA:D® courses were held for physical therapists with 176 participants. To date, a total of 594 physical therapists have completed the GLA:D® course and at year-end, 284 units in Denmark offered the GLA:D® program to patients. Already in 2014, GLA:D® achieved one of two visions for 2017, which was to educate 400 physical therapists. In 2015, we were proud to achieve the other one as well, which was to include at least 7 000 patients. This huge increase in number of physical therapists and patients is most likely the result of a great demand for evidence-based patient education and exercise among people with hip or knee pain in Denmark.

If the clinical guidelines are to be successfully implemented, the three elements of GLA:D® (education of physical therapists, patient education and exercise and registration of data in the GLA:D® registry) must be in focus, and patients, politicians, researchers, physical therapists and other professionals and reporters must be made aware of GLA:D®. The members of the multidisciplinary steering and reference groups of GLA:D® (see section 10) are working hard to accomplish this.

7.1. Scientific and multidisciplinary activities

The evidence-based aspect of GLA:D® is essential and is considered very important for the improvement of treatment options to this group of patients. Since the registry now includes an adequate number of patients to allow solid statistical analyses, the year 2016 will see the first scientific analyses of data from the GLA:D® registry. Such research is expected to contribute fundamental knowledge at an international level and also improve treatment of patients in the future and increase awareness of GLA:D® as an evidence-based treatment strategy. GLA:D® has also been presented at a number of national and international scientific conferences and research events such as Bone and Joint Decade World Summit, 3rd Guidelines Conference European Region of WCPT and the 2015 National Congress of the Association of Danish Physiotherapists. Due to the massive interest in the courses in 2013 and 2014, we were once again invited to instruct general practitioners in 2015 as an element of a course on diagnostics and treatment of osteoarthritis. We clearly noticed the enthusiasm of the general practitioners over the new treatment option for their osteoarthritis patients. Close cooperation between the GLA:D® physical therapists and the general practitioners is essential to ensuring that patients are offered evidence-based treatment.

Other researchers and students are increasingly interested in using data from the GLA:D® registry for different projects. Project proposals must always be approved by GLA:D®, however, it is often just a matter of routine as the very purpose of the GLA:D® registry is to communicate and develop knowledge and evidence about osteoarthritis and the treatment of the disease. In 2015, Angela Ching, who is a PhD student from the University of Nottingham, who had been granted an OARSI Collaborative Scholarship to work with GLA:D® data, came to visit. Her study was a mixed methods study focusing on both quantitative and qualitative aspects of patients' perception of GLA:D®. In

2016, she is going to present the results at the OARSI 2016 World Congress in Amsterdam and write a research article on the project. Moreover, two projects on what osteoarthritis patients experience may have an effect on their outcome from participation in GLA:D® in the long term and the overweight patient's experience with participation in GLA:D® were completed in connection with the master of public health program at Aalborg University. Finally, two bachelor projects, one from University College of Northern Denmark about Mulligan mobilization in combination with GLA:D® and one from University College Lillebaelt about osteoarthritis patients' motivation for life-long learning.

7.2. Implementation, trademark protection and awards

Project on barriers in the Region of Southern Denmark

In 2014, Practice Consultant and Physical Therapist Flemming Pedersen received funds from the Region of Southern Denmark for a project that is to uncover barriers to implementing GLA:D®. In cooperation with Sarah Kroman (MSc Physiotherapy and Physical Therapist) from Faaborg Fysioterapi, he has conducted group interviews with GLA:D® clinic owners and physical therapists and identified barriers to implementing GLA:D® with a view to finding a way to overcoming these barriers. This work is essential to ensuring that all citizens of Denmark are offered treatment that is in accordance with the clinical guidelines. The results are expected to be published in a report sometime in 2016.

Implementation in the Region of Southern Denmark

In 2014, a multidisciplinary working group was set up with a view to evaluating and optimizing the implementation of the clinical guidelines for knee osteoarthritis. The report is expected in 2016.

GLA:D® networking in the municipalities

On 22nd September, the Danish Rheumatism Association and the University of Southern Denmark hosted a theme day about GLA:D® implementation in the municipalities. The purpose of the theme day was to help the municipalities in implementing GLA:D®, as experience shows that municipalities find it harder to implement GLA:D® than the private clinics do. The theme day led to the establishment of a network for GLA:D® units within the municipalities, which may be used to exchange experiences and help overcome barriers. Municipalities that are interested in further information about this network may contact Lene Mandrup Thomsen from the Danish Rheumatism Association at lmthomsen@gigtforeningen.dk.

The future of GLA:D® lies in both private practice, the municipalities and other relevant places. GLA:D® has no desire that GLA:D® should be limited to one particular place. GLA:D® aims at ensuring that as many patients as possible are offered evidence-based treatment irrespective of place of residence, financial situation and health care sector.

GLA:D® trademark protection

The GLA:D® trademark has been protected, consequently, logos will be followed by the symbol for registered trademark "®". This is to make sure that GLA:D® and related materials are used solely for the intended purpose and that the high quality of GLA:D® is maintained in the future.

The Association of Danish Physiotherapists Research Prize 2015

In 2015, Søren T. Skou was awarded the Association of Danish Physiotherapists research prize 2015 (Figure 17). The association awards yearly a physical therapist who through research, education or otherwise has demonstrated outstanding achievement in the development of physical therapy. According to the association, Søren T. Skou received the prize because of "*his important role in the popularization of GLA:D®, which is one of the biggest successes in the physiotherapy sector in recent years*" (http://fysio.dk/fafo/Nyheder/Soren-Thorgaard-Skou-far-Danske-Fysioterapeuters-Pris-2015/#.VqHmPfnhCUk).

Figure 17. Søren T. Skou receives the Association of Danish Physiotherapists research prize 2015

The Golden Scalpel Award 2015

In 2015, GLA:D® was among the 14 nominees for the Golden Scalpel, which is given annually by Dagens Medicin to honor an initiative that demonstrates innovation and commitment to healthcare. Though we did not win the prize, we were honored to be nominated because it emphasizes the importance of GLA:D® in the Danish health care system.

7.3. Political and press focus

The media's massive interest in GLA:D® continues. Throughout the past year, GLA:D® has been featured in national media such as Ekstra Bladet (Figure 18) and Politiken both in the spring (Figure 19) and the fall. In October 2015, GLA:D® was also mentioned in an article in the weekly magazine Ugebladet Søndag. Kommunal Sundhed, which is the newsletter of Dagens Medicin, brought a story on GLA:D®, which continues to be the most frequently visited story on their website (Figure 20). Also, there has been a number of articles, TV and radio clips in local and regional media. Many of the features were not initiated by GLA:D®, but originated from journalists, other health professionals or citizens of Denmark. This reflects the importance and nation-wide popularity of GLA:D®.

Figure 18. GLA:D® in Ekstra Bladet (Photo: Ekstra Bladet)

Figure 19. GLA:D® in Politiken (Photo: Politiken)

Figure 20. GLA:D® in Kommunal Sundhed (Photo: Kommunal Sundhed)

7.4. International focus on GLA:D®

In 2015, like the year before, we received a lot of inquiries from researchers and clinicians who want to cooperate with us on the implementation of GLA:D®-like programs in their home countries. In 2015, the first formalized cooperation was established with Bone and Joint Canada regarding the implementation and testing of a pilot project in the Canadian province Ontario (Figure 21). The objective of the agreement is to make sure that all GLA:D® criteria are met and thus ensure high-quality treatment. In October 2015, Ewa Roos and Søren T. Skou visited Toronto, Canada, to launch the first international GLA:D® course (Figure 22, http://www.sdu.dk/om_sdu/fakulteterne/sundhedsvidenskab/nyt_sund/glad_canada). In 2016, other similar agreements are expected to follow.

GLA:D CANADA

Figure 21. GLA:D® Canada

Figure 22. Canadian physical therapists and researchers participating in GLA:D® course.

8. Grants and financing, GLA:D®

Time of grant	Fund/pool	Amount
Spring 2015 Applicant: Søren T. Skou Co-applicant: Ewa Roos	The Practice Foundation	DKK 300 000 for project manager
Spring 2015 Applicant: Søren T. Skou Co-applicants: Jakob Kjellberg and Ewa Roos	The Danish Rheumatism Association	DKK 100 000 for health economic analysis
Winter 2013 Applicant: Søren T. Skou Co-applicant: Ewa Roos	The Danish Physiotherapists Association's Fund for research, education and practice development	DKK 33 500 for expenses relating to the registry and for project manager
Winter 2012 Applicant: Søren T. Skou Co-applicant: Ewa Roos	The Danish Rheumatism Association	DKK 75 000 for construction of website and expenses relating to the registry
Fall 2011 Applicant: Søren T. Skou Co-applicant: Ewa Roos	The Danish Physiotherapists Association's Fund for research, education and practice development	DKK 25 000 for expenses relating to the registry and for project manager

Table 19. Grants awarded to GLA:D®

GLA:D® hopes to receive more grants in the future (Table 19), which is a prerequisite for consistent quality in education, treatment and registration. Therefore, applications seeking funds have been submitted to various funding institutions. Hopefully, regions and/or municipalities are also going to support the project in the future.

8.1. The finances of GLA:D®

Expenses

All new patients and GLA:D® units involve an expense payable to Procordo, which operates and maintains the database. Also, Søren T. Skou is paid 50% by GLA:D®. Moreover, some of the funds are used to pay employees for specific tasks within GLA:D® (primarily administration).

Revenue

In addition to the above-mentioned funds, revenue generated from the courses offered to physical therapists was used to organize the courses and cover the expenses listed above.

Total

All in all, GLA:D® breaks even.

GLA:D® is a nonprofit organization and generates no profit to Ewa Roos, Søren T. Skou or the University of Southern Denmark, where GLA:D® is organized.

9. GLA:D® – Final comments

The achievement of both visions for 2017 two years ahead of time means that it is time to think ahead.

On 6th January 2016, the GLA:D® registry reached 10 000 registered patients. Based on the number of new patients included during the first weeks of 2016, the potential growth in number of patients in GLA:D® gives reason for a cautious estimate that more than 20 000 patients will be included in the GLA:D® registry at end-2016. At the same time, more than 850 physical therapists will have completed the GLA:D® course.

The vision for the future must now be to define how to ensure that the objectives of GLA:D® are attained, including identify quality indicators. A part of this job will be to apply for grants from Danish regions and municipalities. This would secure the future for GLA:D® and thus evidence-based treatment for osteoarthritis patients.

In the years to come, tests for certification and re-certification must be developed to maintain the high level of treatment in GLA:D®. Also, we must continue the development of the GLA:D® registry for the benefit of both patients and physical therapists.

10. Facts about GLA:D® and contact information

10.1. GLA:D® organization and contact information

- Head of registry, GLA:D®
    - Ewa M. Roos, Professor and Physical Therapist, University of Southern Denmark
    - eroos@health.sdu.dk
- Project manager, GLA:D®
    - Søren Thorgaard Skou, Postdoc and Physical Therapist, University of Southern Denmark and Aalborg University Hospital
    - + 45 23 70 86 40, stskou@health.sdu.dk; www.GLAiD.dk
- Steering group (directly responsible for the development of GLA:D®)
    - Multidisciplinary, national group (6 people; physiotherapy, orthopedic surgery, GP):
      Anders Odgaard, Consultant Orthopedic Surgeon and MD, Gentofte Hospital
      Linda Fernandes, PhD and Physical Therapist, Senior Therapist, OUH, Odense.
      Marianne Kongsgaard, Practice Consultant and Physical Therapist, Dronninglund Fysioterapi og Træning
      Jens Søndergaard, Professor and GP, University of Southern Denmark
      Ewa M. Roos
      Søren Thorgaard Skou
- Reference group (assists in the development of GLA:D®)
    - Multidisciplinary, national group (7 people; physiotherapy, orthopedic surgery, chiropractic, nursing):
      Allan Villadsen, Medical Practitioner, Svendborg Hospital
      Anette Liljensøe, PhD and Nurse, Department of Orthopaedic Surgery, Aarhus University Hospital
      Erik Poulsen, Postdoc and Chiropractor, University of Southern Denmark
      Inger Mechlenburg, Senior Researcher and Physical Therapist, Department of Clinical Medicine, Aarhus University
      Martin Thylstrup Nørgaard, Physical Therapist, Municipality of Odense
      Ole Simonsen, Consultant Orthopedic Surgeon and MD, Aalborg University Hospital
      Asger Kudahl, Chief Consultant, Municipality of Odense

10.2. Registered GLA:D® units

The map at www.GLAiD.dk shows all GLA:D® units and their contact information. The map is updated whenever a new GLA:D® unit is registered.

10.3 Database partner

The GLA:D® database is operated by Procordo Aps.

10.4. History of GLA:D®

- May 2010
  - Preliminary talks with BOA on their approach
- June 2011
  - Visit at BOA, Gothenburg
- August 2011
  - First agreement made on the launch of an osteoarthritis school in Denmark
- October 2011
  - Project manager at BOA course, Gothenburg
- Fall 2011
  - Pilot project at Arkadens Fysioterapi is launched under the name of GLA:D®
  - A pilot version of the GLA:D® registry is established on the basis of a DKK 25 000 grant from the Danish Physiotherapists Association.
- May 2012
  - GLA:D® steering and reference groups are formed
- December 2012
  - DKK 75 000 grant from the Research Council of the Danish Rheumatism Association to build a website and for expenses relating to the registry.
- January 2013
  - Establishment of the GLA:D® registry
  - First GLA:D® course for physical therapists
- December 2013
  - 719 patients/citizens and 80 physical therapists in the GLA:D® registery
  - DKK 33 500 grant from the Danish Physiotherapists Association to cover expenses relating to the registry and pay for the project manager
- December 2014
  - 3 637 patients/citizens and 418 physical therapists in the GLA:D® registry
- March 2015
  - DKK 100 000 grant from the Danish Rheumatism Association for health economic analysis
- April 2015
  - DKK 300 000 grant from Fysioterapipraksisfonden to pay for the project manager
- December 2015
  - 9 827 patients/citizens and 594 physical therapists in the GLA:D® registry

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