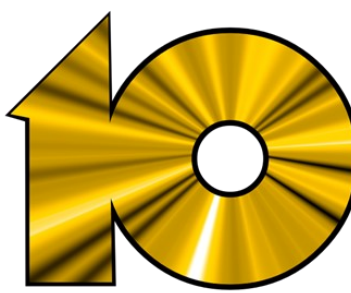




Annual Report 2022

GLA:D[®] 2013 - 2023  **YEARS**
10 years | 10 countries | 100.000 participants

GLA:D® Denmark Annual Report 2022

By Dorte Thalund Grønne, Ewa Roos, Søren Thorgaard
Skou, Alice Kongsted and Jan Hartvigsen

Translation to English: Dorte Thalund Grønne and James
Young

Layout: Dorte Thalund Grønne

Copyright © 2023

GLA:D® Denmark, Department of Sport and Biomechanics,
SDU, Denmark, May 2023

Excerpts, including figures and tables, are permitted upon
clear indication of source.

The report can be downloaded from www.gladdanmark.dk

Photos: © GLA:D®

GLA:D® Annual report 2022

GLA:D® Denmark Team

GLA:D® represents evidence-based treatment programs for knee/hip osteoarthritis or ongoing/recurrent back pain. Key elements in GLA:D® are patient education and supervised exercise to increase self-management. The elements of GLA:D® are constantly in development and based on the newest research and clinical guidelines in Denmark and internationally.

GLA:D® has been developed at the University of Southern Denmark in collaboration with well-known researchers, patients and clinicians. In 2023, GLA:D® will celebrate its 10 year anniversary. Since enrollment of the first participants in 2013, more than 100,000 persons have participated in GLA:D® throughout the world. GLA:D® is now implemented in 10 countries and delivered by more than 8,000 clinicians.

In this report, you can read more about the status of GLA:D®, selected results from the Danish GLA:D® registry, new research results, and information about international collaboration.

Enjoy reading the report!



Alice Kongsted

Chiropractor, PhD, professor

GLA:D® Back



Dorte Thalund Grønne

Physiotherapist, MSc, research assistant

GLA:D® Knee/hip



Ewa Roos

Physiotherapist, PhD, professor

GLA:D® Knee/hip & GLA:D® International Network



James Young

Chiropractor, PhD, postdoc

GLA:D® International Network



Jan Hartvigsen

Chiropractor, PhD, professor, head of research

GLA:D® Back



Jesper Hoeg

Physiotherapist

GLA:D® Back



Lars Stig Møller

Consultant

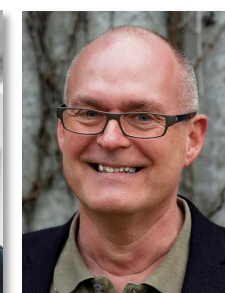
GLA:D® Knee/hip + Back



Morten Pape

Physiotherapist, MSc

GLA:D® Knee/hip



Per Kjær

Physiotherapist, PhD, professor, head of research

GLA:D® Back



Sarah Kromann

Physiotherapist, MSc, research assistant

GLA:D® Knee/hip + Back



Søren Thorgaard Skou

Physiotherapist, PhD, professor, head of research

GLA:D® Knee/hip

What is GLA:D®?



Photo: © GLA:D®

Contents GLA:D®



Patient education

2 x 1—1½ hour



Supervised exercises

6-8 weeks (2 times a week)

Access to GLA:D®



Self-referral to a GLA:D®-unit



Referral from general practitioner or specialist

GLA:D® for knee/hip osteoarthritis and GLA:D® Back are targeting people with knee/hip osteoarthritis and ongoing or recurrent episodes of back pain, respectively.

GLA:D® consists of:

- 1) An initial consultation with physical examination, functional tests, assessment of level of exercises and registration in the national database.
- 2) Two sessions of patient education focusing on knowledge of knee/hip osteoarthritis or back problems, risk factors, causes of pain, purpose of exercises, recommendations and management of pain.
- 3) Individually tailored supervised group training twice a week for 6-8 weeks.
- 4) A final consultation with evaluation, functional tests and focus on topics such as continuing training.

Access to GLA:D®

Patients with knee/hip osteoarthritis or back pain can access GLA:D® via

- referral from a general practitioner,
- referral from a specialist,
- own inquiry to a GLA:D® clinic,
- referral via health insurance company,
- enrolment in municipal setting.

Aim of GLA:D®

GLA:D® aims to support implementation of recommendations from national and international clinical guidelines.

The overall objective of GLA:D® for knee/hip osteoarthritis is that

- all patients with osteoarthritis have equal access to evidence-based treatment irrespective of place of residence or financial situation,
- surgery should only be considered when non-operative treatment does not give satisfactory results.

The overall objective of GLA:D® Back is that

- patients learn to manage their pain through exercise and increased knowledge about the problem,
- all patients, regardless of residence, must be able to be offered patient education and exercise based upon clinical guidelines.

Distribution of GLA:D®

Clinicians are trained to deliver GLA:D® at a 2-day course held by SDU, and only certified clinicians can offer GLA:D®. This ensures that the content of the patient education and exercise therapy is standardised across all GLA:D® providers.

In 2013 - 2022, SDU held 25 GLA:D® knee/hip osteoarthritis courses for a total of 1588 clinicians, and in the period 2017 - 2022, 16 GLA:D® Back courses for 731 clinicians. Mainly physiotherapists offer GLA:D®. Chiropractors are also trained in GLA:D® Back and comprise 10% of the course participants.

In 2022, 274 units were offering GLA:D® for knee/hip osteoarthritis and 73 units were offering GLA:D® Back. In 2022, 22 municipalities were offering GLA:D® for knee/hip osteoarthritis and 4 municipalities were offering GLA:D® Back. Two municipalities were offering GLA:D® to both target groups.

Municipalities offering GLA:D® (2022)

Knee/hip osteoarthritis: Albertslund, Brønderslev, Fredensborg, Frederiksberg, Frederikssund, Gribskov, Hedensted, Helsingør, Hillerød, Hjørring, Horsens, Høje-Taastrup, Hørsholm, Jammerbugt, København, Ringkøbing-Skjern, Roskilde, Silkeborg, Stevn, Tårnby, Vallensbæk and Vordingborg.

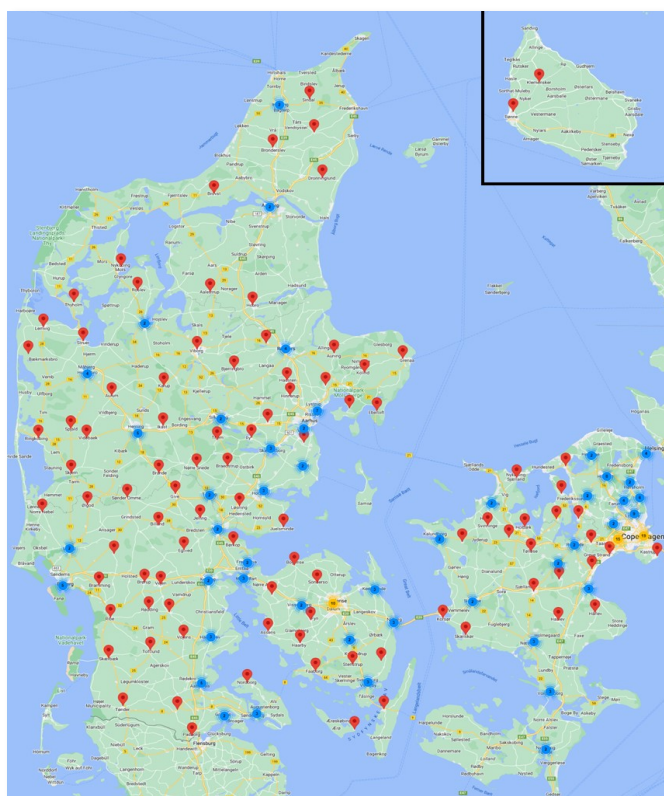
Back: Egedal, Frederikssund, Lejre and Tårnby.

Patient participation in GLA:D®

79% of the knee and hip patients participated in both education sessions, and correspondingly, 81% in a minimum of 10 out of 12 exercise sessions. 72% of the back patients participated in both education sessions, and 75% in at least 10 out of 16 exercise sessions.

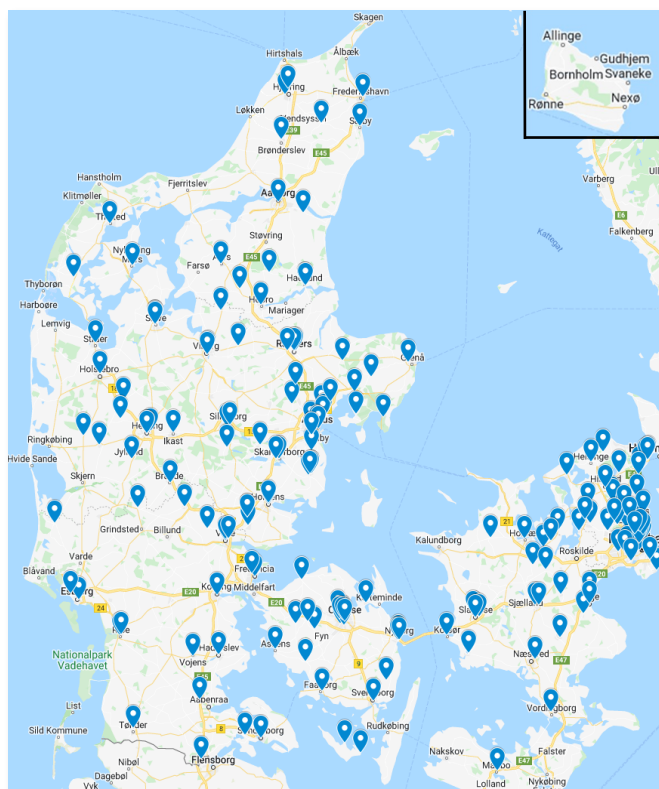
Great satisfaction with GLA:D®

8 out of 10 patients state that they are very or very highly satisfied with the GLA:D® intervention.



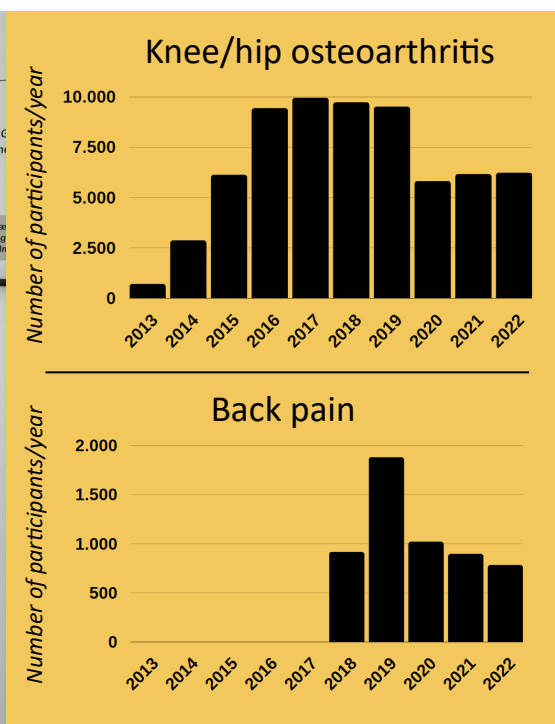
Units offering GLA:D® for knee/hip osteoarthritis

* Blue and yellow dots indicate several clinics



Units offering GLA:D® Back

Who participates in GLA:D®?



GLA:D® for knee/hip osteoarthritis

Over 66,000 persons with knee or hip osteoarthritis have attended a GLA:D® program. The number of annual participants has been stable at around 10,000 people in the period 2016-2019 and around 6,000 people in the period 2020 - 2022(post COVID -19). 70% of the participants are women. The average age is 66 years, and 75% and 64% of the knee and hip patients are overweight, respectively. 2 of 3 have other diseases e.g. hypertension or high cholesterol level, heartdisease, lungdisease, diabetes, osteoporosis or metabolic disorder. 1 of 3 report back pain.

Most participants have problems with the knee, and fewer have problems with the hip (73% vs. 27%). About half of both knee and hip patients have had symptoms for more than a year when starting GLA:D®, and 27% and 3% of the knee and hip patients state that they have previously had surgery in the most affected joint, respectively. At baseline, the pain level is on average 4.7 (0-10), and 62% of knee patients and 67% of hip patients report taking painkillers.

GLA:D® Back

In total 5,392 persons have attended GLA:D® Back at the end of 2022. 2 of 3 are women and the average age is 58 years.

59% have had back pain for more than a year. At baseline, the pain level is on average 5.4 (0-10), and 57% state taking painkillers. 7 of 10 participants in GLA:D® Back have other diseases and 7 of 10 participants received other treatment for their back problem the month before starting a GLA:D® Back program. On average, participants have had 6.0 sick days due to back pain in the last 3 months before entering the GLA:D® Back program.

GLA:D® clinical registers

Patient benefit in the GLA:D® program is monitored in clinical registers. Clinicians enter data at the start and end of the intervention, and patients fill out questionnaires at the beginning, after 3 and 12 months, and additionally at 6 months for the back patients. The registers provide continuous monitoring of the program and offer unique opportunities for research into treatment delivered in the primary sector.

Results—GLA:D® knee/hip



Results after GLA:D®

	Knee	Hip
Pain 	- 27 %	- 21 %
Medication 	- 29 %	- 22 %
Walking speed 	+ 7 %	+ 7 %
Quality of life 	+ 13 %	+ 10 %

Less pain

Immediately after the GLA:D® course, the average knee/hip pain intensity decreases by 27% (from 4.7 to 3.4 (0-10)) for the knee patients and by 21% (from 4.7 to 3.7 (0-10)) for the hip patients. One year after starting the GLA:D® program, the average reduction in pain intensity is maintained. The proportion with pain at night drops from 36% to 23% for the knee patients and from 50% to 38% for the hip patients, which is maintained at one year.

Use of pain medication decreases

Immediately after the GLA:D® course, the proportion who have reported taking painkillers within the last 2 weeks drops from 62 to 44% for the knee patients and from 67 to 52% for the hip patients. 42 and 39% of the knee and hip patients report having a lower use of painkillers than before the GLA:D® course, respectively and similar results are seen after one year.

Better physical function

Walking speed increases on average by 7% from 1.5 m/sec before the GLA:D® course to 1.6 m/sec immediately after the GLA:D® course for both knee and hip patients. Physical function is also

measured via the ability to rise from sitting in 30 seconds (Chair Stand Test). The average number of rises increases by 17% from 12 to 14. About 10% of the participants in GLA:D® complete the Single Leg Hop Test. Average distance the patient jumped on the most affected side increased from 38 cm at baseline to 51 cm after the GLA:D® program for the knee patients and from 43 cm to 53 cm for the hip patients.

Higher quality of life

Immediately after GLA:D®, the average quality of life related to the knee/hip measured with the KOOS/HOOS QOL (The Knee or Hip Injury and Osteoarthritis Outcome Score Quality of Life subscale) is improved by 13% for the knee patients (from 46 to 52) and 10% for the hip patients (from 48 to 53). One year after entering GLA:D®, there is an improvement of 22% for the knee and hip patients compared to before the course.

Fewer are on sick leave

Among knee patients who have not received a joint replacement surgery during the follow-up period, the proportion who state that they have been on sick leave due to their joint within the past year decreases from 11% to 6% and correspondingly from 6% to 4% for the hip patients.

Results—GLA:D® Back



Photo: © GLA:D®

Results after GLA:D®

Back

Pain		- 28 %
Medication		- 30 %
Function		+ 25 %
Achieved individual goal		68 %

Less pain

Immediately after the GLA:D® course, the average pain intensity in the back decreases by 28% (from 5.4 to 3.9 (0-10)). One year after starting the GLA:D® course, the average reduction in pain intensity is maintained.

Use of pain medication decreases

Immediately after the GLA:D® course, the proportion who report having taken painkillers for their back pain drops from 57% to 40%. This level is maintained one year after initiating GLA:D®.

Better physical function

Physical function measured via the number of times you can rise from sitting in 30 seconds (Chair Stand Test) improves on average by 25% from 12 to 15 times. Similarly, the level of functioning measured via the Oswestry Disability Index increases by 24% (from ODI score of 25 to 19% (0-100)). Endurance of abdominal and back muscles is increased by 47% and 44%, respectively.

Less fear of physical activity

After the course, there are fewer thoughts or fears of pain during physical activity measured as an average decrease of 23% from 9.3 to 7.2 (0-24) on the Fear-Avoidance Scale.

Fewer are on sick leave

The average number of days on sick leave during the last 3 months due to back pain decreases from 6.0 to 1.2 immediately after the course and further to an average of 0.9 days at one year.

Many achieve individual goals

Before the course, the patient and clinician, in collaboration, set an individual goal for the patient. At the end of the course, 68% state that they have partially or fully achieved their goals, and 21% that they have fully achieved their goals.

New research in GLA:D®



Photo: © GLA:D®

Research

- Implementation
- Individual factors
- Lumbar Spinal Stenosis
- Knee instability
- Pain medication use

Implementation of GLA:D® Back

How has GLA:D® Back been implemented by clinicians who have attended the GLA:D® Back course, do they include eligible patients, and does the patient population change over time? And what role has the COVID pandemic played? These questions are answered in this paper: [Link to the article.](#)

Factors contributing to back pain

It is well-known that both physical, psychological, and social factors contribute to back pain and its consequences. By analyzing information from around 4000 participants in GLA:D® Back, we have identified subgroups where physical and psychological factors are particularly important. These profiles can help us target patient education to individual needs. [Link to the article.](#)

Symptoms of lumbar spinal stenosis

Self-reported symptoms of lumbar spinal stenosis are common among participants in GLA:D® for knee/hip osteoarthritis. Symptoms of lumbar spinal stenosis are not associated with treatment outcomes. [Link to the article I.](#) [Link to the article II.](#)

Knee instability

Four out of five participants in GLA:D® for knee/hip osteoarthritis self-report to have knee instability. Those reporting a high level of knee instability are younger, have a higher BMI, more often have a low physical activity level, have higher knee pain intensity and lower walking speed compared to those not reporting knee instability. Both participants who report and do not report knee instability benefit from GLA:D®, but those with self-reported instability seem to benefit even more from the program. [Link to the article.](#)

Pain medication use

Among participants in GLA:D® for knee/hip osteoarthritis using analgesics before attending the program, more than half either discontinued analgesic use or shifted to lower risk analgesics. The proportion using analgesics drops from 64% before to 44% after GLA:D®. A small proportion (4%) of the participants have a chronic opioid use and it seems that attending GLA:D® did not change the opioid use for these participants. [Link to article I.](#) [Link to article II.](#)

Other research articles from GLA:D®

Please find the full list of research articles based on GLA:D® at the following websites: [GLA:D® knee/hip](#) and [GLA:D® Back.](#)

GLA:D® International Network

GIN: GLA:D® International Network

GLA:D® for knee/hip osteoarthritis is offered to patients in Denmark, Canada, Australia, China, New Zealand, Switzerland, Austria, The Netherlands, USA, Germany and Ireland— in USA GLA:D® is only offered as part of a pilot project. Previously GLA:D® has been tested in Nigeria. GLA:D® Back is offered in Denmark, Canada, Norway, Switzerland and Australia. In Norway and Australia only as part of a pilot project, but GLA:D® Back will undergo a full implementation in Australia from 2023 and onwards.

National GLA:D® initiatives are usually linked with academic environments at a university in collaboration with local health providers and in Germany, in collaboration with local health insurance companies.

The international collaboration in GLA:D® is formalized in the **GLA:D International Network (GIN)**. The purpose of GIN is to exchange experiences and en-

International status

	<i>Knee/hip osteoarthritis</i>	<i>Back pain</i>
	101,000 participants	6,300 Participants
	7,500 Clinicians	1,200 clinicians
	1,250 clinics	165 clinics

sure that GLA:D® is delivered consistently world-wide and to support the collaboration in program development and research. The group meets online twice a year to discuss new initiatives, carry out workshops and present new research projects.

See more: www.gladinternational.org.

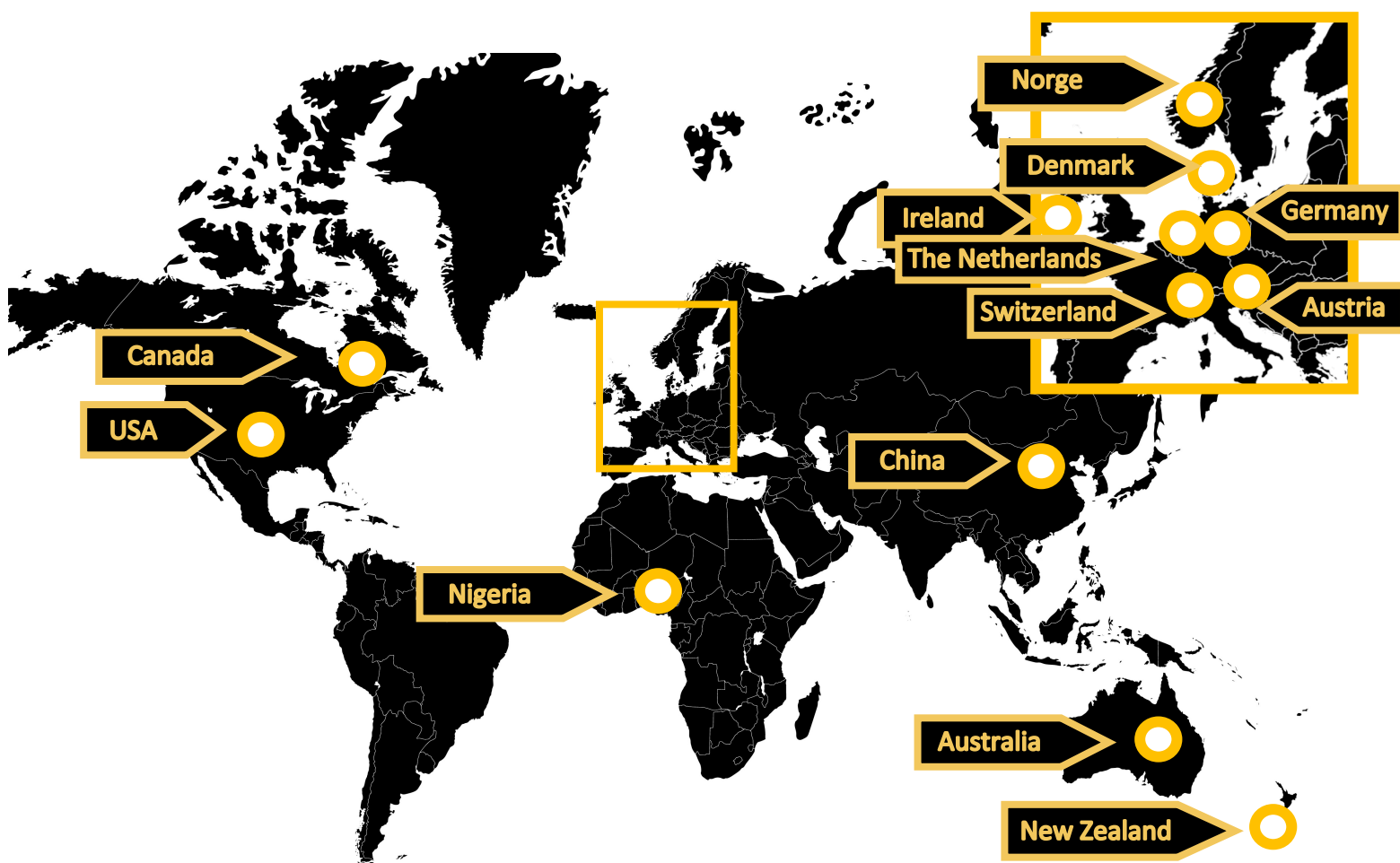






Photo: © GLA:D®

Contact: glaidsupport@sdu.dk (knee/hip) or gladryg@sdu.dk (back)

GLA:D® website: www.gladdanmark.dk

International website under construction: www.gladinternational.org

GLA:D® 2013 - 2023 **10 YEARS**
10 years | 10 countries | 100.000 participants