2017 GLA:D™ Canada: Implementation and Outcomes

INCEPTION TO DECEMBER 2017

GLA:D™ CANADA

GLA:D™ Canada Project Team

Project Co-Leads

Rhona McGlasson, PT MBA
Executive Director
Bone and Joint Canada

Aileen Davis, BScPT MSc PhD
Senior Scientist and Division Head
Health Care and Outcomes Research
Krembil Research Institute
University Health Network
Co-Chair, Bone and Joint Canada

Program Coordinator

Mariel Ang
Krembil Research Institute
University Health Network

Data Manager

Rosalind Wong
Krembil Research Institute
University Health Network

To cite this report:

Davis AM, McGlasson RM. GLA:D™ Canada: Implementation and Outcomes Inception to December 2017. Bone and Joint Canada, [June 7, 2018] http://gladcanada.ca/

Acknowledgements

GLA:D™ Canada is licensed to the Canadian Orthopaedic Foundation (COF) with implementation under Bone and Joint Canada, the knowledge translation division of the COF. Details of the program can be found at www.gladcanada.ca.

Implementation in Ontario is supported by a Grow Grant to COF from the Ontario Trillium Foundation (01/2016-12/2018).

We are grateful for the support of training courses and implementation activities from:

- Alberta Health Services
- The Arthritis Society, British Columbia and Yukon Division
- Sunnybrook Holland Orthopaedic & Arthritic Centre with funding from the J. Norrie Swanson Education Fund
- Physiotherapy Association of British Columbia
- The Arthritis Society

BONE and JOINT CANADA

Canadian Orthopaedic Foundation

Ontario Trillium Foundation

Executive Summary

GLA:D™ Canada, a community-based education and exercise program for people with hip and knee osteoarthritis (OA), is being implemented in Canada. Through to the end of December 2017, 14 training courses for health professionals were conducted across the country and 61 sites implemented the program.

Patients attending the GLA:D™ Canada program participate in 2 or 3 education sessions and 12 supervised and individualized exercise sessions.

Participants in the GLA:D™ Canada Program Through to the End of December 2017

- Of the 607 with symptomatic hip and or knee OA attending the GLA:D™ Canada program, 428 participants (about 70%) agreed to provide their data.
- These individuals ranged in age from 34 to 87 years and 77% were female.
- One-third reported primarily hip problems and the other 2/3 primarily reported knee problems.

Participant Outcomes

- 178 completed the program with pre-program and 3-month follow-up data available by the end of December 2017.
- On average, pain intensity decreased 28% for both hip and knee participants.
- Quality of life improved on average 10% for the hip participants and 25% for knee participants.
- Functional tests also improved with hip and knee participants, on average, improving their walking speed and increasing the number of chair stands completed in 30 seconds.
- Thirty-five percent of participants reported that they increased the number of days per week they were moderately physically active for 30 minutes or more.

Perceived Benefit and Satisfaction

- Ninety percent felt they benefited from and were satisfied with the program.
- Seventy-one percent of participants reported that they used what they learned at least daily, with an additional 24% reporting they used the information every week.


GLA:D

Table of Contents

List of Tables

List of Appendices

What is GLA:D™ Canada?

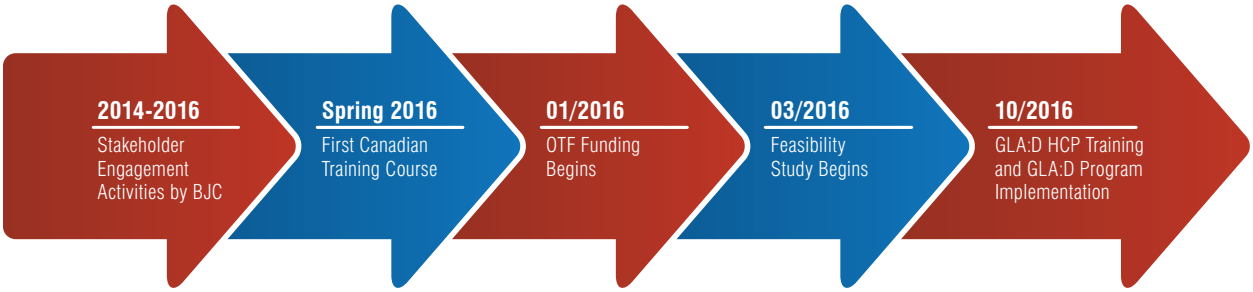
GoodLife with osteoArthritis in Denmark (GLA:D®)[1] is:

- an evidence-based education and personalized, targeted exercise program for people with symptomatic hip and or knee osteoarthritis (OA)
- a non-profit initiative developed at the University of Southern Denmark.

GLA:D® was brought to Canada under the title GLA:D™ Canada (hereafter GLA:D) in 2016 through an agreement with the Canadian Orthopaedic Foundation (COF). COF has implemented the program under its knowledge translation division, Bone and Joint Canada (BJC).[2]

Adaptation of the program to the Canadian context was facilitated through learnings from a feasibility study.[3] Implementation in Ontario is supported through funding from the Ontario Trillium Foundation and Alberta Health Services supports Alberta provincial implementation. Implementation began nationally in January 2017 (Figure 1).

Figure 1: Implementing GLA:D™ Canada



Stakeholder activities [4]
BJC=Bone and Joint Canada
OTF=Ontario Trillium Foundation

The Canadian program mirrors that in Denmark[1] and includes 3 components: a training course for health care providers (HCPs), patient education and exercise and the national (Canadian) database for quality monitoring.

Course for Health Care Providers

Health Care Providers (HCPs) participate in a 1.5 day course giving them the requisite skills to deliver OA care as described in the clinical guidelines.[5-7]

The course includes:

- current evidence on OA and its management
- introduction to GLA:D and overview of outcomes to date
- instructions on the GLA:D protocol, including delivering patient education, supervising and instructing exercise based on neuromuscular principles[8, 9] and the use of the GLA:D database
- access to a digital 'tool box' with implementation support materials (e.g. Power Point presentations for use in patient education, etc.).

The training is appropriate for HCPs whose scope of practice includes clinical management of people with hip and knee OA through education and exercise (e.g. physiotherapists, chiropractors and, in some provinces such as Ontario, registered kinesiologists). The intake criteria for the course also allow other individuals with appropriate training and experience to apply by providing evidence of their clinical experience in the management of this patient population. This process was instituted to maximize patient access to OA care, particularly where access to HCPs is limited or in community fitness centres where the program might be offered to those with early OA symptoms.

HCPs who successfully complete the GLA:D course are certified to provide the GLA:D program for patients.

Education and Exercise for Patients

The education and exercise program for patients is delivered over a 6 to 8 week period and the delivery processes are organized by each site optimizing logistics for the site and their patient population.

Education

- two patient education sessions delivered over 2 weeks by the HCP focusing on:
    - knowledge and treatment of OA
    - exercise, its beneficial effects on symptoms and general health
    - self-help advice
- an optional, third education session where a graduate of the GLA:D program returns to share their experience

Exercise

- 12 sessions of supervised exercise based on Neuro-muscular principles delivered twice weekly for 6 weeks
- patients are strongly encouraged to participate in the group-based NEuroMuscular EXercise program (NEMEX) for the 12 sessions as a group format enhances motivation and learning with peer-support
- patients, who for some reason do not wish to or who are not able to participate in the group exercise, can do the exercise program at home, based on detailed instructions by their HCP, or a combined group and home-based exercise can be provided.

After participating in the GLA:D program, patients are encouraged to continue being physically active and to continue their exercises to sustain the effects from the treatment in the long term. Individual strategies for increasing and continuing physical activity are discussed throughout the program.

The National GLA:D™ Database

Data from pre-program (baseline), 3- and 12-month follow-up are input into the national, electronic GLA:D database. Data include patient-reported, validated outcome measures and functional tests. The database is designed to describe the population at baseline and, after the program of education and exercise, to evaluate pain, function, quality of life and other outcomes at 3 and 12 months follow-up. All sites that implement GLA:D are required to have ethics approval for data capture and sharing.

Organizational Structure of GLA:D™

GLA:D activities are guided by input from the National Steering Committee. The membership includes leaders from each of the provinces where the program is being implemented as well from organizations with a mandate for OA education and exercise, such as The Arthritis Society (Appendix 1). Within each province, a structure is developed that meets the needs of their provincial implementation strategy and, where possible, it is embedded in the provincial and regional activities for management of hip and knee OA.

Building Training Capacity Nationally

Individuals have been trained to provide the 1.5 day GLA:D training program to HCPs. Trainers include therapists with research programs in OA who are knowledgeable of the evidence for OA management and therapists with expertise in exercise, neuromuscular exercise and delivery of the GLA:D program. This allows pairing of the scientists and clinical therapists for delivery of the course content as well as a cadre of therapists with experience delivering the program to assist with the practical component on day 2 where course participants perform and practice exercise progression. During 2017, national training capacity was built in the eastern, central, and western regions of the country.

Program Implementation

Fourteen training courses were held through the end of 2017 with 8 in Ontario, 2 in Alberta and 1 each in British Columbia, Manitoba, New Brunswick and Newfoundland. 458 HCPs were trained in GLA:D. The majority were physiotherapists (76%); 11% were chiropractors and 13% were kinesiologists. A small number of other HCPs were trained; for example, individuals with a Canadian Society of Exercise Physiology CEP designation. Based on data captured in 7 courses, 52% of course attendees worked in the private sector and 48% worked in the public sector.

Course evaluation data indicated that 93% of HCPs thought they were ready to deliver the GLA:D program, 99% felt confident in providing instruction on alignment and exercise based on neuromuscular principles, and 95% were confident in their ability to answer GLA:D participants' questions.

GLA:D Training and Site implementation

- 14 courses for HCPs
- 61 sites implemented the program by December 2017 in 5 provinces

Sites began delivering the program and collecting patient outcome data over the course of 2017. By year's end, 61 sites in 5 provinces had implemented the program. The majority of sites were in Ontario, Alberta and British Columbia, with sites in Manitoba and Newfoundland beginning to provide the program. The protocols for ethics approval and data sharing were effective, especially within the private sector where a centralized ethics process could be undertaken. Delays for public-sector organizations related to internal processes for program approval and ethics.

GLA:D Participants and their Outcomes

Participants in the GLA:D Program

By the end of December 2017, 607 people in 4 provinces, New Brunswick, Ontario, Alberta and British Columbia, participated in the GLA:D program with 428 (70%) consenting and participating in data collection. Given the mandate of the Ontario Trillium Foundation funding, Ontario was the major focus of implementation through the early part of 2017 and 73% of participants are from that province. Data are not presented by individual province for this report due to the low volume by province in this initial implementation period.

428 participants provided data at baseline and 140 (33%) reported that their hip was their most problematic joint; 288 (67%) reported that their knee was most problematic. Most GLA:D participants were female (77%). Table 1 provides a more detailed description of the 428 participants.

Other characteristics of participants (n=428):

- age ranged from 34 to 87 years with median age 65 years
- 301 (70%) were married or lived with a partner
- 366 (85%) had greater than high school education
- 147 (35%) described themselves as working or a homemaker; 253 (60%) were retired; and, 11 (3%) were on leave receiving sick benefits.

Table 1: Baseline characteristics of the people participating in GLA:D and providing data (n=428)

	All Participants (n=428)	Hip Symptoms (n=140)	Knee Symptoms (n=288)
Age (mean, sd)	64.8, (8.9)	65.2 (9.4)	64.6 (8.6)
Sex (n, %):			
Male	98 (22.9)	36 (25.7)	62 (21.5)
Female	330 (77.1)	104 (74.3)	226 (78.5)
Marital status (n, %):			
Single	31 (7.2)	10 (7.1)	21 (7.3)
Married/living with partner	301 (70.3)	98 (70.0)	203 (70.5)
Other	96 (22.4)	32 (22.8)	64 (22.2)
Education (n, %):			
< High school	62 (14.5)	14 (10.0)	48 (16.7)
> High School	366 (85.5)	126 (90.0)	240 (83.3)
Employment status (n, %):			
Working full or part-time, homemaker	147 (34.8)	43 (31.4)	104 (36.5)
Not working (on benefits)	11 (2.6)	3 (2.2)	8 (2.8)
Seeking work	5 (1.2)	1 (0.7)	4 (1.4)
Retired	253 (60.0)	88 (64.2)	165 (57.9)
Other	6 (1.4)	2 (1.4)	4 (1.4)
Missing	6 (1.4)	3 (2.1)	3 (1.0)
BMI (n, %):			
Underweight	2 (0.5)	2 (1.4)	0
Normal	104 (24.5)	50 (36.2)	54 (18.9)
Overweight	142 (33.4)	46 (33.3)	96 (33.7)
Obese	177 (41.6)	40 (29.0)	137 (48.0)
Missing	3 (0.1)	2 (1.4)	1 (0.3)
Comorbidity count (n, %):			
0	117 (27.5)	36 (26.0)	81 (28.4)
1	135 (31.8)	57 (41.3)	78 (27.4)
2	93 (21.9)	27 (19.6)	66 (23.1)
3	47 (11.0)	10 (7.1)	37 (13.0)
4 or more	36 (8.5)	10 (7.1)	26 (9.1)
Comorbidity condition (n, %)*:			
Hypertension	147 (34.5)	46 (33.3)	101 (35.4)
High cholesterol	119 (28.0)	29 (21.0)	90 (31.6)
Cardiovascular	29 (6.8)	11 (8.0)	18 (6.3)
Chronic lung disease and asthma	37 (8.7)	12 (8.7)	25 (8.8)
Diabetes	34 (8.0)	8 (5.8)	26 (9.1)
Depression	46 (10.8)	7 (5.1)	39 (13.7)
Low back pain	92 (21.5)	33 (23.9)	59 (20.7)

*individuals can report more than one type of comorbidity
All other conditions were reported by less than 4% of participants

The majority of participants were overweight or obese (75%). Mean body mass index (BMI) was 30. Hip patients on average had a normal BMI, mean 27.7, whereas knee participants on average were overweight with a BMI of 31.5.

Seventy-three percent of participants reported one or more comorbid conditions with 42% reporting 2 or more. Hypertension (34%) and hyperlipidemia (28%) were commonly reported.

Medication Use at Baseline

Two of the 428 did not respond to the question related to any medication use. Three hundred and nine of the 426 (72%) responding reported using some type of medication for their hip or knee OA. Of those who reported using medication, non-steroidal anti-inflammatory drugs (NSAIDs) were most commonly used (n= 238, 77%) as was acetaminophen (n=219, 71%); 65 (21%) reported use of narcotic medications. Topical NSAID use was reported by 151 (49%). Serotonin and norepinephrine reuptake inhibitors (SNRIs) use was reported by 17 or 5%.

Seventeen of 250 (7%) responding reported receiving a hyaluronic acid injection and 51 of 255 (14%) responding reported receipt of a steroid joint injection.

Glucosamine use was reported by 105 of 266 (39%) who responded. Herbal supplement use was reported by 113 of the 272 (41%) participants responding.

Participant Outcomes to 3-Months Follow-up

One hundred and seventy-eight participants, 63 and 115 with their hip and knee as their primary complaint respectively, had baseline and 3-month follow-up data. Of these, only 19 participants had reached one-year follow-up. Therefore, this report focuses on those with 3-month follow-up.

Program Adherence

Of the 178 with 3-month outcome data, 176 and 175 reported their attendance at the education and exercise sessions respectively. Seventy-five percent of participants (n=132) attended 2 education sessions, with 20 attending 3 sessions. One participant did not attend any sessions and 2 (12%) attended 1 session. One hundred and fifty-nine (91%) attended 10 or more of the 12 exercise sessions. Five people attended 6 or fewer exercise sessions.

One of the 607 participants withdrew from the GLA:D program as they decided to pursue hip replacement surgery.

Adverse Events

There were no adverse events.

Participant Outcomes Baseline to 3-Months Follow-up

Pre-program and 3-month outcome data are reported in Table 2. Both the hip and knee participants on average reported a 28% decrease in their pain intensity as measured by the Numeric Pain Rating Scale.[10] For hip and knee participants respectively, pain on activity decreased by 14% and 11% and activities of daily living improved by 9% and 8%; sports and recreation improved by 11% and 25%; and, quality of life (QOL) improved by 10% and 25% as measured by the HOOS[11] and KOOS.[12]

Key Findings

- 28% reduction in pain intensity
- 35% of participants increased their physical activity

The functional tests also improved with an average increased walking speed of 0.1 and 0.2 m/sec for hip and knee participants respectively. Hip participants on average, completed 3 additional chair stands in 30 seconds whereas knee participants completed an additional 4 chair stands.

Thirty-five percent (62 of 178 participants) reported that they increased the number of days per week they were moderately physically active for 30 minutes or more.[13]

Medication Use

One of the 178 participants did not respond to the questions related to medication use. Given the similarity and stability in medication use over time, data for the hip and knee participants are reported together.

One hundred and thirty-six of 177 (77%) reported using some type of medication for their hip or knee OA prior to GLA:D participation and this decreased to 72% (n=127) at 3 months follow-up. Non-steroidal anti-inflammatory drugs (NSAIDs) were most commonly used (75%) at baseline. Twenty-eight (16%) reported using narcotic medications. NSAID and narcotic medication use were 72% and 15% at 3 months follow-up.

Topical NSAID use was reported by 55 (31%) at baseline and by 44 (25%) at 3-months follow-up. Serotonin and norepinephrine reuptake inhibitors (SNRIs) were used by 12 (7%) at baseline decreasing to 11 participants at 3-months.

Glucosamine use was reported by 45% at both baseline and 3 months follow-up. Herbal supplement use similarly was reported by 45% at both time points.

Six of 177 (3%) responding reported receiving a hyaluronic acid (HA) joint injection and 20 (11%) reported receipt of a steroid joint injection prior to participating in the GLA:D program. At 3-months follow-up, 2 additional people reported receiving a HA injection and 5 additionally reported receiving a steroid injection.

Table 2: **Baseline to 3-month follow-up outcomes for hip and knee participants**

	Hip participants (n=63)				Knee participants (n=115)			
Outcome	**Pre mean, sd**	**3 months mean, sd**	**Mean change**	**95% CI change (p-value)**	**Pre mean, sd**	**3 months mean, sd**	**Mean change**	**95% CI change (p-value)**
Numeric Pain Rating Scale (no 0-10 worst pain)	5.0, 2.0	3.5, 2.1	-1.4	-1.9, 0.9 (<0.0001)	5.6, 2.2	4.0, 2.5	-1.6	-2.1, -1.1, (<0.0001)
HOOS/KOOS (no 0-100 worst pain etc.):								
Pain	56.5 13.3	64.6 18.8	8.0	5.1, 11.0 (<0.0001)	55.5 17.8	61.4 18.7	5.9	3.3, 8.5 (<0.0001)
ADL	63.8 15.4	69.5 16.9	5.8	3.1, 8.5 (<0.0001)	63.2 18.1	68.5 19.6	5.2	2.7, 7.7 (<0.0001)
Sport and Recreation	35.3 19.2	39.2 23.9	4.0	0.2, 7.9 (0.05)	21.6 19.8	27.1 24.3	5.5	2.1, 8.9 (0.002)
QOL	42.4 16.1	47.1 19.7	3.8	0.7, 7.0 (0.02)	34.3 18.4	43.4 19.0	9.1	6.1, 12.1 (<0.001)
30 second chair stand* (count)	12.8, 3.8	15.9, 4.6	3.1	2.3, 4.0 (<0.0001)	12.0, 5.0	16.8, 7.1	4.4	3.5, 4.4 (<0.0001)
40 meter walk test Speed (m/sec)	1.6, 0.6	1.7, 0.4	0.1	0.1, 0.2** (<0.0001)	1.9, 3.1	2.1, 3.0	0.2	0.1, 0.3 (0.004)

CI=Confidence Interval; HOOS=Hip Disability and Osteoarthritis Outcome Score; KOOS=Knee Injury and Osteoarthritis Outcome Score; ADL=Activities of Daily Living; QOL=Quality of Life
*p-value based on Wilcoxon signed rank test; all others based on paired t-test
**The 95% CI before rounding is 0.08, 0.21.

Perceived Benefit of the Program

The perceived benefit of the program was high with 90% (n=161) reporting the program was beneficial or very beneficial. Eight-five percent (n=150) were satisfied or very satisfied with the program.

Ongoing Adherence

Seventy-one percent (n=123) of participants reported that they used what they learned in the program every day or several times a day, while an additional 24% (n=43) reported that they used the information every week.

Summary

GLA:D™ Canada was successfully launched providing training programs to certify HCPs in evidence-based management of hip and knee OA. A total of 458 HCPs from multiple professions in both the public and the private sector were trained to enhance program accessibility. The program was implemented by HCPs in 61 sites in 4 provinces by the end of December 2017. Patients with symptomatic hip and knee OA participating in GLA:D experienced reduced pain, improved function and quality of life, with about 1/3 reporting increased physical activity. Physical activity is critical to preventing and managing chronic diseases such as OA, cardiac disease, diabetes.[14, 15]

Ninety percent of GLA:D participants felt they benefitted from the program and report that they continued to incorporate their new knowledge into daily life.

These improvements reflect those of the initial feasibility study[3] although the changes in outcomes are slightly smaller in magnitude. In the single site, feasibility study conducted in a research context, GLA:D participants on average experienced a 2 point (40%) improvement in pain intensity. The decrease in magnitude improvement in this real-world, clinical context is expected as programming moves from a controlled research study environment to community clinical implementation.

The Canadian implementation results for the patient-reported improvements in pain, quality of life and the functional tests reflect those reported from clinical implementation in Denmark.[1, 16]

The Danish results also indicate that a proportion of people on sick benefits return to work and that there was a decrease in medication use.[1] However, as shown in Table 1, only 3% of Canadian GLA:D participants were on sick benefits at the start of the program compared to 27% in the Danish sample so it is not surprising that the Canadian data does not show change. It is not clear why medication use showed little change in the Canadian data as compared to the changes observed in Denmark. However, the findings in this report are similar to those of the Canadian feasibility data[3] and we speculate that there may be some medication prescribing differences in Canada compared to Denmark.

In conclusion, based on program implementation by clinical sites and participant outcomes to date, the GLA:D program is successfully supporting people with hip and knee OA manage their symptoms, improve their function and quality of life, and increase their physical activity.

References

1. Skou, S.T. and E.M. Roos, Good Life with osteoArthritis in Denmark (GLA:D): evidence-based education and supervised neuromuscular exercise delivered by certified physiotherapists nationwide. BMC Musculoskelet Disord, 2017. 18(1): p. 72.
2. Roos, E.M., et al., GLA:D to have a high-value option for patients with knee and hip arthritis across four continents: Good Life with osteoArthritis from Denmark. Br J Sports Med, 2018. 0:1–2. doi:10.1136/bjsports-2017-098904 online first
3. Davis, A.M., et al., Cross-cultural adaptation and implementation of Good Life with osteoarthritis in Denmark (GLA:D): group education and exercise for hip and knee osteoarthritis is feasible in Canada. Osteoarthritis Cartilage, 2018. 26(2): p. 211-219.
4. Davis, A.M., et al., Reducing the impact of Osteoarthritis (OA): A report on the prevention and effective management in Canada. 2014., Bone and Joint Canada.
5. McAlindon, T.E., et al., OARSI guidelines for the non-surgical management of knee osteoarthritis. Osteoarthritis Cartilage, 2014. 22(3): p. 363-88.
6. Fernandes, L., et al., EULAR recommendations for the non-pharmacological core management of hip and knee osteoarthritis. Ann Rheum Dis, 2013. 72(7): p. 1125-35.
7. Nelson, A.E., et al., A systematic review of recommendations and guidelines for the management of osteoarthritis: The chronic osteoarthritis management initiative of the U.S. bone and joint initiative. Semin Arthritis Rheum, 2014. 43(6): p. 701-12.
8. Ageberg, E., et al., Effects of neuromuscular training (NEMEX-TJR) on patient-reported outcomes and physical function in severe primary hip or knee osteoarthritis: a controlled before-and-after study. BMC Musculoskelet Disord, 2013. 14: p. 232.
9. Ageberg, E. and E.M. Roos, Neuromuscular exercise as treatment of degenerative knee disease. Exerc Sport Sci Rev, 2015. 43(1): p. 14-22.
10. Farrar, J.T., et al., Clinical importance of changes in chronic pain intensity measured on an 11-point numerical pain rating scale. Pain, 2001. 94(2): p. 149-58.
11. Nilsdotter, A.K., et al., Hip disability and osteoarthritis outcome score (HOOS)--validity and responsiveness in total hip replacement. BMC Musculoskelet Disord, 2003. 4: p. 10.
12. Collins, N.J., et al., Knee Injury and Osteoarthritis Outcome Score (KOOS): systematic review and meta-analysis of measurement properties. Osteoarthritis Cartilage, 2016. 24(8): p. 1317-29.
13. Tremblay, M.S., et al., New Canadian physical activity guidelines. Appl Physiol Nutr Metab, 2011. 36(1): p. 36-46; 47-58.
14. Kelley, G.A., et al., Effects of community-deliverable exercise on pain and physical function in adults with arthritis and other rheumatic diseases: a meta-analysis. Arthritis Care Res (Hoboken), 2011. 63(1): p. 79-93.
15. Desveaux, L., et al., Community-based exercise programs as a strategy to optimize function in chronic disease: a systematic review. Med Care, 2014. 52(3): p. 216-26.
16. Skou, S.T. and E.M. Roos, GLA:D Annual Report ® 2015. www.GLAiD.dk

Appendices

Appendix 1: GLA:D™ Canada Leadership Team (Ontario)

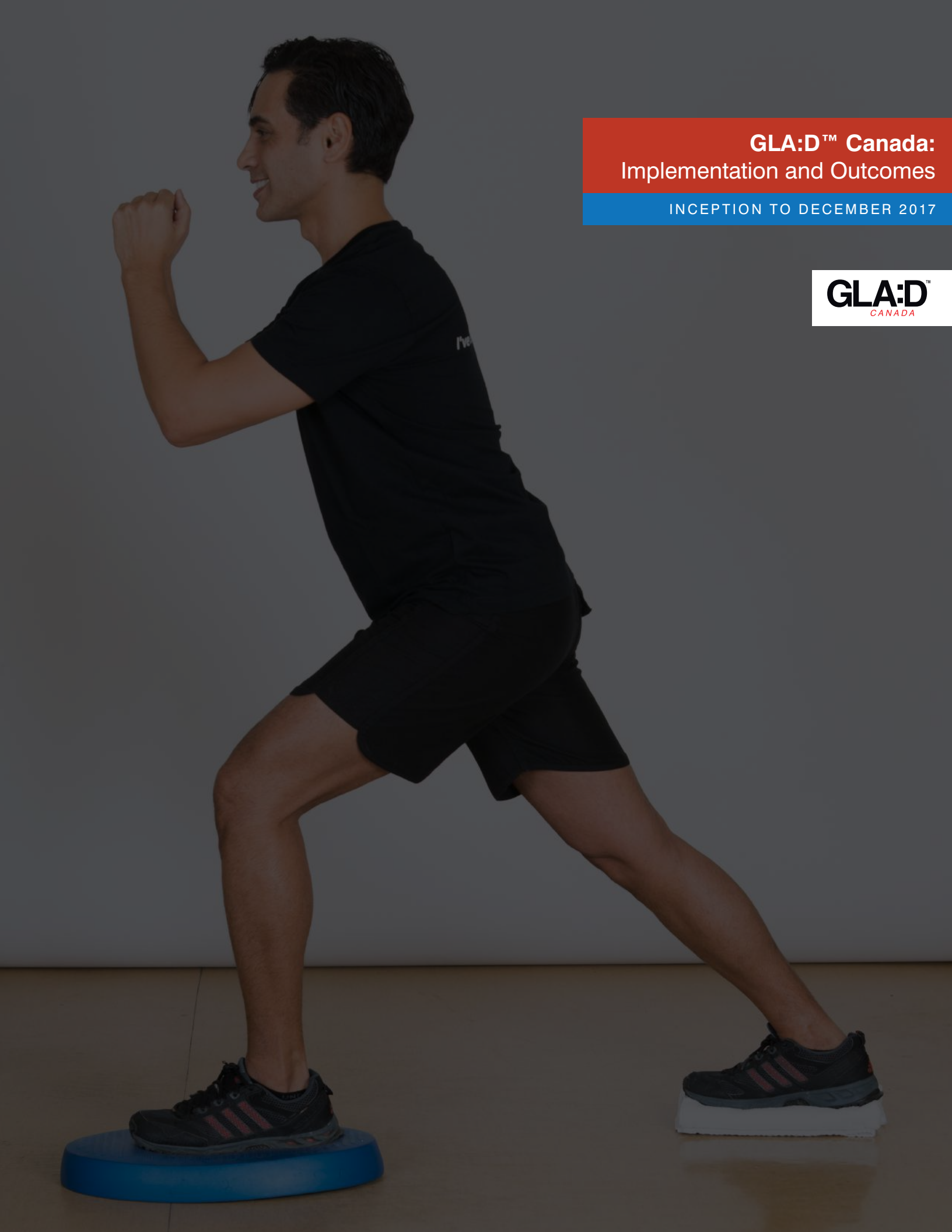
Aileen Davis	Senior Scientist and Division Head	Division of Health Care and Outcomes Research Krembil Research Institute, University Health Network and Professor, University of Toronto
Rhona McGlasson	Executive Director	Bone and Joint Canada
Isla Horvath	Executive Director and Chief Executive Officer	The Canadian Orthopaedic Foundation

Appendix 2: GLA:D™ Canada Ontario Steering Committee

Aileen Davis	Senior Scientist and Division Head	Division of Health Care and Outcomes Research Krembil Research Institute, University Health Network and Professor, University of Toronto
Rhona McGlasson	Executive Director	Bone and Joint Canada
Isla Horvath	Executive Director and Chief Executive Officer	The Canadian Orthopaedic Foundation
Ed Ziesmann	Vice President, Education, Programs & Services	The Arthritis Society
Deborah Kennedy	Manager Rehabilitation	Holland Arthritic and Orthopaedic Centre Sunnybrook Health Sciences Centre, Toronto
Krista McIntyre	National Director of Program Development, Specialty Services	Lifemark
David Blevins	Patient Representative	
Amanda Smart	Director, Practice, Policy, Member Services	Ontario Physiotherapy Association
Jennifer Nash	Community Outreach Coordinator	Ontario Chiropractic Association
Melanie Burgess	Director, Events & Sponsorship Marketing	The Arthritis Society
Rob Petrella	Professor School of Kinesiology and Western Centre for Public Health and Family Medicine	University of Western Ontario, London

Appendix 3: GLA:D™ Canada National Steering Committee

Aileen Davis	Senior Scientist and Division Head	Division of Health Care and Outcomes Research Krembil Research Institute, University Health Network and Professor, University of Toronto
Rhona McGlasson	Executive Director	Bone and Joint Canada
Jill Robert	Senior Provincial Director Surgery and Bone & Joint Health Strategic Clinical Networks	Alberta Health Services
Isla Horvath	Executive Director and Chief Executive Officer	The Canadian Orthopaedic Foundation
Ed Ziesmann	Vice President, Education, Programs & Services	The Arthritis Society
Deborah Marshall	Health Technology Assessment and Research	University of Calgary, Department of Community Health Sciences
Cathy Hoyles	Regional Professional Practice Consultant, Physiotherapy	Eastern Health Eastern Health, St. John's, Newfoundland and Labrador
Nancy Cho	Practice Lead, Physiotherapy	Vancouver Coastal Health, British Columbia
Laurie Walus	Manager, Prehabilitation Clinic & Hip & Knee Resource Centre, Surgery Program & Director of Special Projects	Winnipeg Regional Health Authority, Manitoba
Mel Slomp	Executive Director Bone and Joint Health- Strategic Clinical Network	Alberta Health Services
Deborah Kennedy	Manager Rehabilitation	Holland Arthritic and Orthopaedic Centre Sunnybrook Health Sciences Centre, Toronto
Ewa Roos	Professor and Head of Research Unit, Department of Sports Science and Clinical Biomechanics	University of Southern Denmark, Denmark



GLA:D™ Canada: Implementation and Outcomes

INCEPTION TO DECEMBER 2017

GLA:D™ CANADA