Dr. Lora Giangregorio, Associate Professor,
University of Waterloo

TRUE or FALSE?

I do activities to increase muscle **strength**, such as lifting weights or working with resistance exercise bands, twice a week or more.

I do **moderate or vigorous intensity aerobic physical activity** for at least 30 min on 5 or more days per week, in bouts of 10 minutes or more.

I do activities that challenge my **balance** on most days of the week.

I **progressively increase the intensity** of the exercises I do over time, so that they are always challenging me.

Cognitive impairment

Practice tips:

- Written action plan and contingency plans, routine
- Activities with rhythm, ingrained motor patterns e.g., dancing, cycling
- Social support or group exercise with instruction

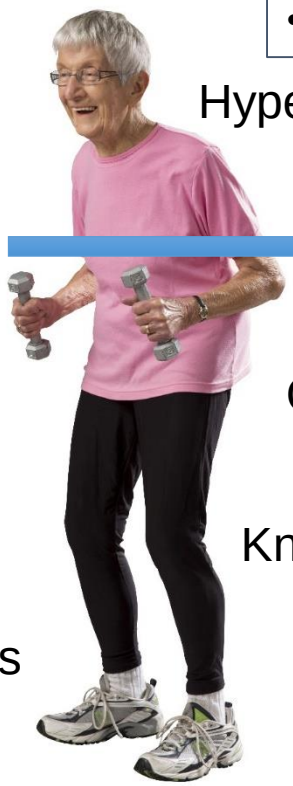
Visual impairment

Hyperkyphosis

Cardiovascular and pulmonary changes

Obesity

Diabetes



Sarcopenia

Practice tips:

- Cardiac rehab?
- ↑ daily activity – habit, steps counts
- ↑ muscle=↑ metabolism, glucose sink

Osteoporosis

Knee OA

Practice tips:

- Joint sparing e.g., water exercise, multijoint movements
- Core stability, alignment, functional exercises, mobility
- Increase strength and size of muscles surrounding joint to reduce impact on bones and cartilage
- Weight loss, limiting inflammation
- Cardiac rehab or exercise physiologist supervision

Falls

Reduced mobility, ROM

http://gladcanada.ca/

Cognitive impairment

Visual impairment

Hyperkyphosis

Cardiovascular and pulmonary changes

Sarcopenia

Obesity

Diabetes

Osteoporosis

Knee OA

Falls

Reduced mobility, ROM

Practice tips:

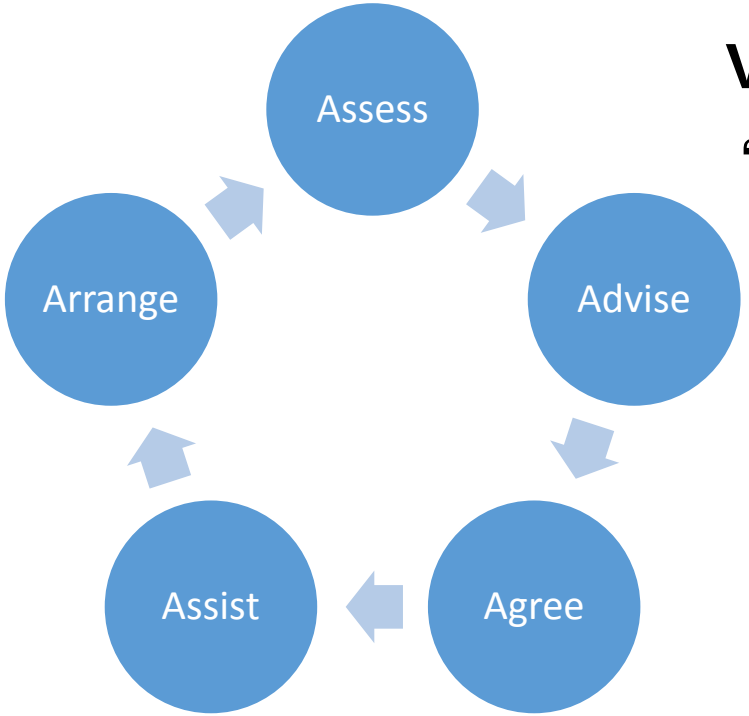
- Multijoint, functional exercises, large muscle groups
- Sufficient intensity and progression
- Adequate protein intake post-exercise and throughout the day– 1.2g/kgBW/day or 25–30 g high-quality protein per meal (2.5 g of Leu)

Practice tips:

- Balance and posture exercises daily
- Spine sparing strategies
- High risk – moderate intensity, risk/benefit, instruction

http://gladcanada.ca/

Exercise Is Medicine® Canada exerciseismedicine.ca



Vision

"Physical Activity is an integral part of prevention and treatment of chronic disease in the Canadian Health Care System, *so that more Canadians meet the Canadian Physical Activity and Sedentary Behaviour Guidelines*.."

Whitlock et al., 2002; Goldstein et al., 2004; Fortier, Tulloch & Hogg 2006

The ideal scenario

Patient visits family MD

Physical activity vital sign

MD provides Ex-RX

Referral to exercise professional (more likely)

MD provides counseling (less likely)

Patient becomes more active & healthy!

EIMC Workshop

Physical activity as medicine among family health teams: an environmental scan of physical activity services in an interdisciplinary primary care setting

C. Moore, J. Lee, J. Milligan, and L. Giangregorio

Table: Types of physical activity services offered by FHTs

FHTs	N = 186	%
Response Rate		
Completed Surveys	102	54.8
Declined	6	3.2
Exercise Service		
Yes	58	31.2
Types of Service	N = 117	%
Diabetes Management	25	18.8
General Health Education	21	15.8
Walking Group	18	13.5
General Fitness Instruction	14	10.5
CVD Treatment	9	6.8
COPD Treatment	5	3.8
Weight Management	4	3.0
Personal Exercise Prescription	4	3.0
Osteoporosis Management	3	2.3
Chronic Pain Management	3	2.3
Mental Health Management	3	2.3
Resistance Training	3	2.3
Running Group	2	1.5
Chronic Disease Management	2	1.5
Active Lifestyle Promotion	1	0.8

Supplementary Table S2. Designation of individuals facilitating physical activity services offered by 57 FHTs

Designation	N = 95	%*
Registered Nurse	33	34.7
Kinesiologist	10	10.5
Dietician	10	10.5
Social Worker	6	6.3
Pharmacist	3	3.2
Other	4	4.2
Recreation Therapist	3	3.2
Volunteer	2	2.1
Diabetes Educator	2	2.1
Fitness Instructor	2	2.1
Lifestyle Coach	1	1.1
Psychiatrist	1	1.1
NR	18	18.9

NR: No Response

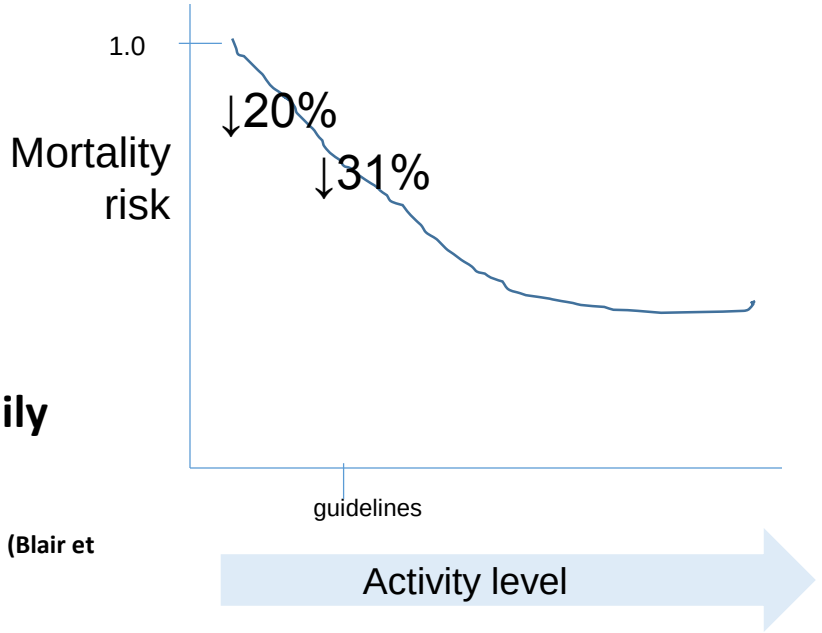
*** % of 95 individuals**

Only 5 FHTs reported offering a one-on-one physical activity counselling service.

Appl. Physiol. Nutr. Metab. 40: 302–305 (2015) dx.doi.org/10.1139/apnm-2014-0387

Why counsel on physical activity?

Arem et al, JAMA Intern Med 2015



- **High population reach** **(CIHI, 2003)**
  - **75-94% of Canadians visit their family physician per year** (Wilson and Ciliska, 1992**)**
- **Preferred source of health information** **(Blair et al., 1998; Kao et al. 1998; Hesse et al. 2005)**

- **Brief Physician counselling is effective: MD counseling to get patient to 150 min MVPA, NNT = 12;** **Vuori et al., Mayo Clinic 2003**
- **Economic gain: estimated that increasing the rate of physically active Canadians by 1% per year would save $2.1 billion/year by 2030**. (Krueger et. al, 2014)

The Five A's Model for PA Counseling

- **ASSESS: Exercise Vital Sign**
- ADVISE
- AGREE
- ASSIST
- ARRANGE

"On average, how many days per week do you engage in moderate to strenuous exercise like a brisk walk?"

"On average, how many minutes do you engage in exercise at this level?"

Days x minutes = ?

Whitlock et al., 2002; Goldstein et al., 2004; Fortier, Tulloch & Hogg 2006

Exercise is Medicine® Canada

Your Prescription for Health

Exercise prescription & referral

Name _____ Age _____

Date _____

Relevant diagnoses _____

REDUCE SEDENTARY BEHAVIOUR

Move more / Sit less / Use stairs / Limit screen time

PHYSICAL ACTIVITY RECOMMENDATIONS

AEROBIC / CARDIOVASCULAR ACTIVITY

Frequency	2	3	4	5	6	7	days / week
Intensity		Light			Moderate		Vigorous
Time	10	15	20	30	40	more	minutes / session
Type							

STRENGTH / RESISTANCE ACTIVITY

2 3 4 5 6 7 days / week

Example

CANADIAN PHYSICAL ACTIVITY GUIDELINES FOR ADULTS 18 YEARS AND OLDER

To achieve health benefits, adults aged 18 years and older should accumulate at lea
150 minutes of moderate- to vigorous-intensity aerobic physical activity per week,
bouts of 10 minutes or more. It is also beneficial to add muscle and bone strengthen
activities using major muscle groups, at least 2 days per week. More physical acti
provides greater health benefits.

REFERRAL FOR ADDITIONAL EXERCISE ASSESSMENT AND COUNSELING

Name / Contact _____

Follow-up / Other _____

YOUR HEALTH PROFESSIONAL

Name Signature Licence #

WHAT DO WE KNOW ABOUT EXERCISE?

- **Exercise will make you feel good and can be fun!**
- **Exercise is effective.** If exercise was a drug, it would be one of the most effective and safe ways to prevent and treat many chronic diseases such as heart disease, hypertension, diabetes, osteoporosis, anxiety disorders and depression!
- **Exercise is safe for your joints.** Regular low impact exercise and gradual muscle strengthening can stabilise and protect your joints from osteoarthritis and reduce the risk of falls and injuries that is associated with poor physical fitness.
- **Improving fitness is more important than losing weight.** Low cardiovascular fitness is associated with a much higher risk of disease and death than being overweight.
- **Walking is free anywhere and any day of the year!**

WHAT ABOUT AEROBIC INTENSITY AND MUSCLE STRENGTHENING?

How can I assess intensity?

- **Light exercise will usually not cause adults to sweat and breathe harder.** It is easy to have a conversation at this intensity. Walking is the typical example of light exercise.
- **Moderate-intensity exercise will cause adults to sweat a little and breathe harder.** It is possible to have a conversation in short sentences. Examples are brisk walking (as if you are late for the bus!) and bike riding.
- **Vigorous-intensity exercise will cause adults to sweat and be "out of breath".** It is difficult to have a conversation. Examples are jogging, swimming laps, cross-country skiing and hiking on hills.

What is strength and resistance exercise?

- Strength and resistance exercises make your muscles work harder by adding weight or resistance to the movement.

For more information

You can consult your health professional, an exercise professional or visit the Resources page on **exerciseismedicine.ca**.

CASEM ACMSE

THE COLLEGE OF FAMILY PHYSICIANS OF CANADA / LE COLLÈGE DES MÉDECINS DE FAMILLE DU CANADA

CSEP | SCPE THE GOLD STANDARD IN EXERCISE SCIENCE AND PERSONAL TRAINING

Canadian Physiotherapy Association / Association canadienne de physiothérapie

RCCSS (CANADA) ROYAL COLLEGE OF CHIROPRACTIC SPORTS SCIENCES (CANADA) / COLLÈGE ROYAL DES SCIENCES SPORTS CHIROPRACTIQUE (CANADA)

The Five A's Model for PA Counseling

- ASSESS
- **ADVISE**
- AGREE
- ASSIST
- ARRANGE

Telling your patients to walk is not consistent with guidelines or evidence and is not a specific enough prescription.

Guidelines

To achieve health benefits, adults aged 18-64 years should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more.

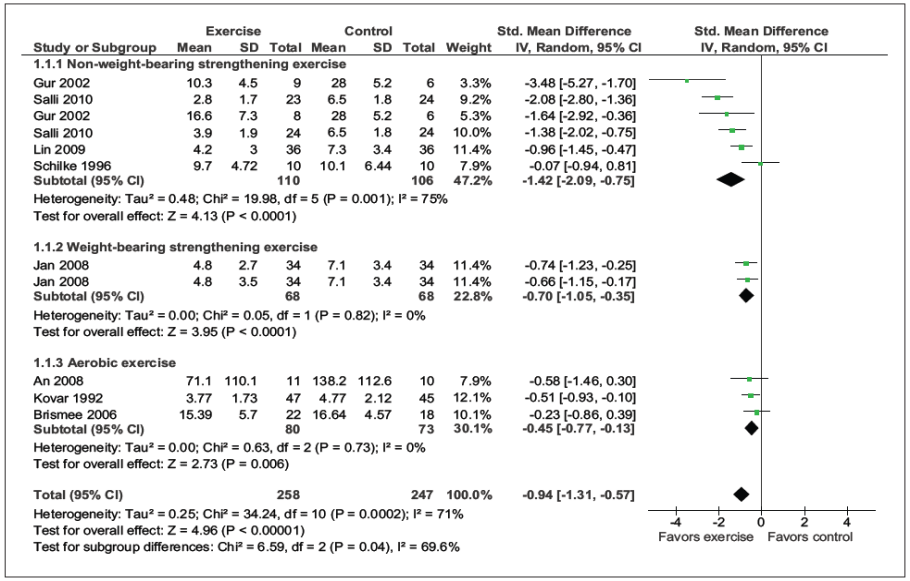
It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week.

More physical activity provides greater health benefits.

Whitlock et al., 2002; Goldstein et al., 2004; Fortier, Tulloch & Hogg 2006

Why emphasize aerobic physical activity, strength (and balance) training?

- Consistent with best evidence and guidelines
- Address therapeutic goals
  - Impaired mobility - ↑ fall risk
  - Quad strengthening to reduce knee impulse in arthritis
  - Shift body composition in diabetes
- Build endurance, self-efficacy
- Short bouts of balance and strength exercises more realistic than prolonged physical activity for some people.



Efficacy of strengthening or aerobic exercise on pain relief in people with knee osteoarthritis.

Tanaka et al. Clinical Rehabilitation 2013; 27(12) 1059–1071

The Five A's Model for PA Counseling

- ASSESS
- ADVISE
- **AGREE**
- ASSIST
- ARRANGE

- How do you feel about becoming more active?
- What do you think about trying an exercise class?
- What other strategies might help you become more active?

Personalized, patient-centred SMART goals e.g.,

"Starting tomorrow, I will walk for 20 minutes every evening after dinner, to increase my activity level."

Whitlock et al., 2002; Goldstein et al., 2004; Fortier, Tulloch & Hogg 2006

BUT giving exercise advice is not that easy when……

Cognitive impairment

Visual impairment

Hyperkyphosis

Cardiovascular and pulmonary changes

Sarcopenia

Osteoporosis

Obesity

Diabetes

Knee OA

Falls

Reduced mobility, ROM

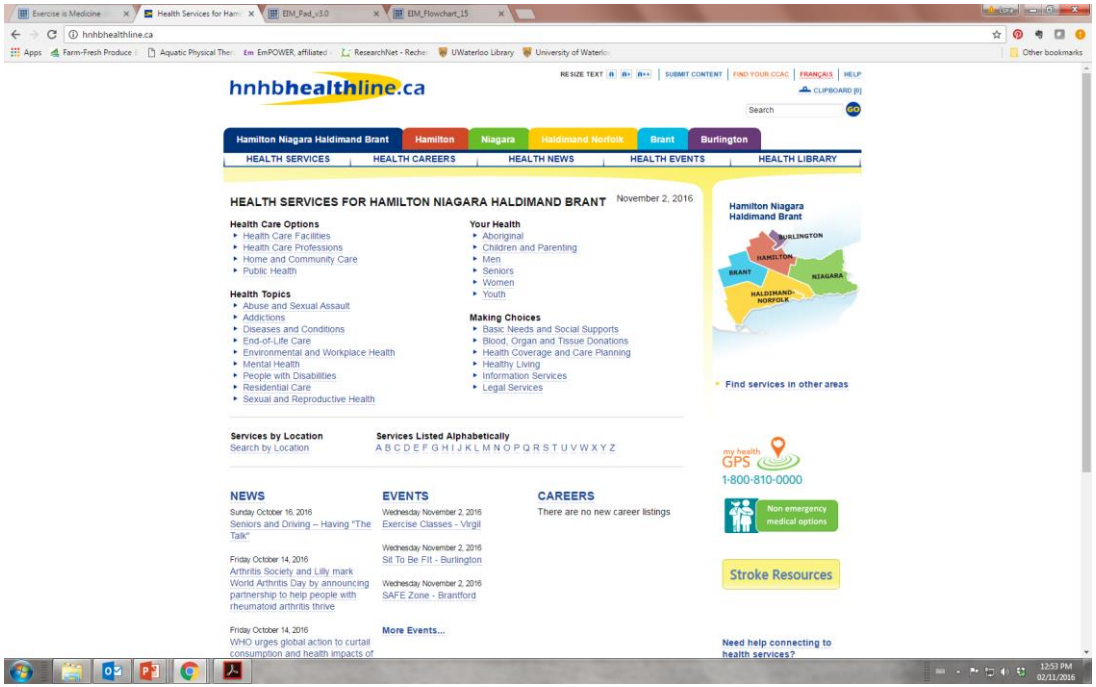
What impairments are present?
What is the person's goals?

Prioritize physical activity and exercise goals
Provide tailored advice and referral

Maybe we can all work together on some solutions?

Assist: Use referrals or counselling to foster change

- www.bonefit.ca locator
- SMART programs
- YMCA programs
- CHANGE program
- Web resources: Too Fit To Fracture
  http://www.osteoporosis.ca/osteoporosis-and-you/too-fit-to-fracture/
- Alzheimer's Society
  http://www.alzhn.ca/
- Arthritis Rehabilitation and Exercise Program
  http://arthritis.ca/ontario/arep



[1]*Rollnick et al., BMJ* 2010; 340: c1900

Too Fit to Fall or Fracture

Strength Training At least 2 days/week

- Exercises for legs, arms, chest, shoulders, back
- Use body weight against gravity, bands, or weights*
- 8 - 12 repetitions per exercise

Try these to get started:
- Classes at YMCA/community centre
- Consult a physical therapist/kinesiologist
- Contact Osteoporosis Canada

Squat

Wall Push Up

Seated Row

Balance Exercises Every day

- Tai Chi, dancing, walking on your toes or heels
- Have a sturdy chair, counter, or wall nearby, and try (from easier to harder): shift weight from heels to toes while standing; stand heel to toe; stand on one foot; walk on a pretend line

Stand on one foot

Heel to toe stance

Posture Awareness Every day

- Gently tuck your chin in and draw your chest up slightly
- Imagine your collarbones are wings - spread your wings slightly without pulling your shoulders back

Do

Don't

Aerobic Physical Activity At least 150 mins/week

- Bouts of 10 mins or more, moderate to vigorous intensity*
- You should feel like your heart is beating faster and you are breathing harder
- You might be able to talk while doing it, but not sing

Examples:
- Brisk walking
- Dancing
- Jogging
- Aerobics class

*If you have a spine fracture, consult a physical therapist/kinesiologist before using weights, and choose moderate, not vigorous aerobic physical activity

Questions? Want a free physical activity booklet? Contact Osteoporosis Canada: English 1 800 463 6842 / French 1 800 977 1778 or www.osteoporosis.ca
Locate a Bone Fit™ trained instructor: English 1 800 463 6842 / French 1 800 977 1778 or www.bonefit.ca

Ontario | Osteoporosis Canada / Ostéoporose Canada | GERAS | University of Waterloo Faculty of Applied Health Sciences Department of Kinesiology

Strength Training (more examples) At least 2 days/week

Other exercises include:
- Upright row
- Step up

Upright Row

Step Up

What are spine sparing strategies?

Spine sparing strategies help "spare" the spine from injury. Injuries to the spine can occur when we bend forward or twist the spine quickly or repeatedly, or if we lift something heavy, bend far forward (e.g., tying shoes) or twist the torso all the way to the side. Bending or twisting while holding a weighted object (e.g., groceries, grandchild) is also risky.

Spine sparing strategies:
- Bend with your hips and knees, not your spine
- Turn your whole body rather than twisting your spine

Using a stool to tie shoes

Do

Don't

Step-to-turn

Ready to learn more?

Osteoporosis Canada has developed tools to help you get too fit to fracture!
- Download a free booklet, one-page summary, and other tools
- Watch videos about exercise, balance training, and safe physical activity
- Watch webcasts by expert researchers

http://www.osteoporosis.ca/osteoporosis-and-you/too-fit-to-fracture/

Not online? No problem! Just call the hotline number below to order a free booklet.

The information contained in this guide is not intended to replace health professional advice. Consult your healthcare provider or a physical therapist about what exercises are right for you.

Questions? Want a free physical activity booklet? Contact Osteoporosis Canada: English 1 800 463 6842 / French 1 800 977 1778 or www.osteoporosis.ca
Locate a Bone Fit™ trained instructor: English 1 800 463 6842 / French 1 800 977 1778 or www.bonefit.ca

Ontario | Osteoporosis Canada / Ostéoporose Canada | GERAS | University of Waterloo Faculty of Applied Health Sciences Department of Kinesiology

Available in English, French, Punjabi, Chinese

Other tools:

- Videos
- Booklet
- Trained exercise professionals via Bone Fit™

http://www.osteoporosis.ca/osteoporosis-and-you/too-fit-to-fracture/

UNIVERSITY OF WATERLOO

"Your Prescription for Health" series

Provides information and advice on exercising safely with health conditions.

Exercising Following Coronary Artery Bypass Surgery
Exercising Following a Heart Attack
Exercising Following a Stroke
Exercising while Losing Weight
Exercising with Alzheimer's
Exercising with Anxiety and Depression
Exercising with Atrial Fibrillation
Exercising with Cancer
Exercising with Low Back Pain
Exercising with Peripheral Arterial Disease
Exercising with Visual Impairment

All titles available for download at:
http://www.exerciseismedicine.org/YourPrescription.htm

Canadian EIMC series due early 2017!

EIMC professional network

The Five A's Model for PA Counseling

- ASSESS
- ADVISE
- AGREE
- ASSIST
- **ARRANGE**

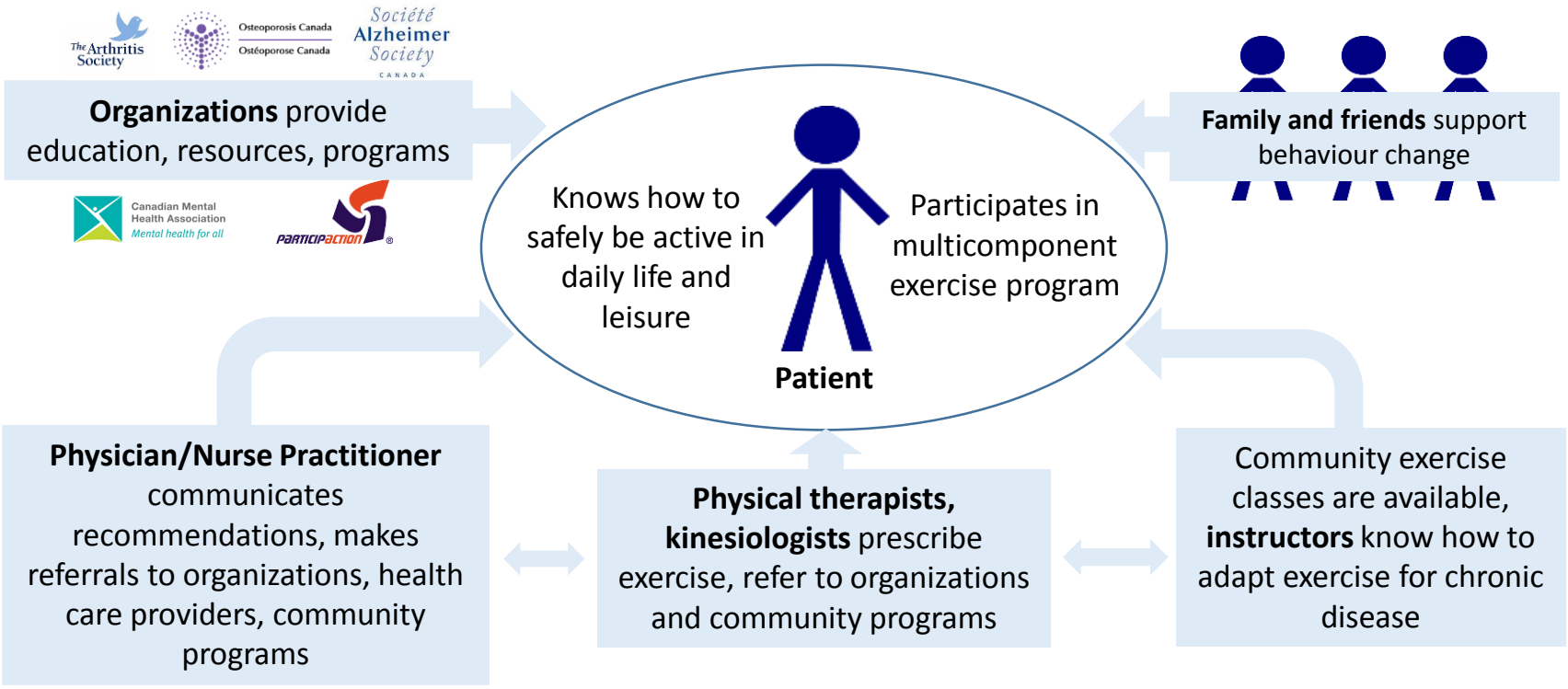
- Record physical activity level in health record
- Plan to follow-up at next visit – reassess, ask about progress
- Reminders, referral with follow-up

REFERRAL FOR ADDITIONAL EXERCISE ASSESSMENT AND COUNSELING

Name / Contact _____

Follow-up / Other _____

Researchers effectively translate research to **knowledge users (bold)**



Policy makers support programs and health care providers to implement evidence-based guidelines

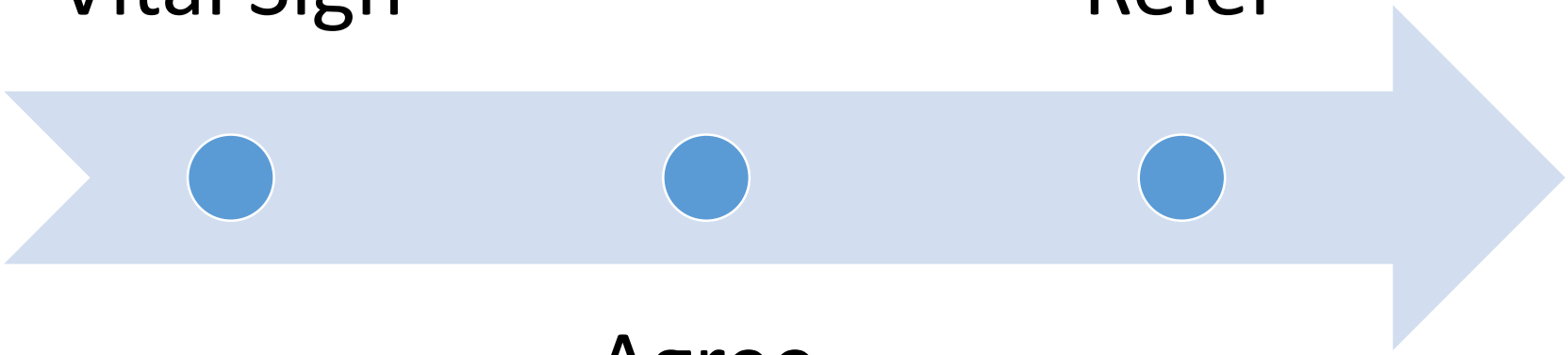
Lora's simplified EAR model

In-house program?

Community
Health care providers
Advocacy groups

Exercise
Vital Sign

Refer

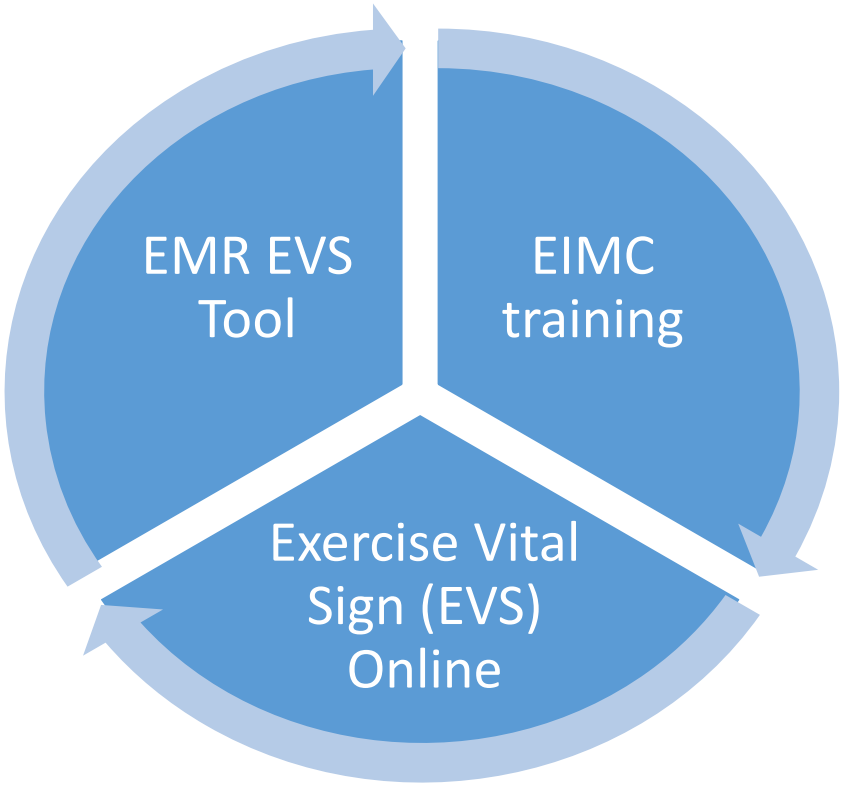


Agree

You would benefit from daily strength, balance or aerobic exercises. There are programs and educational materials I can tell you about. Can we create a plan for you?

New Research

- Co-design EMR tool with family health teams
- Pilot test and evaluate implementation and validity



Partners:
Schlegel-UW RIA
YMCA Canada
Alzheimer's Society of Canada
Canadian Mental Health Association
Bone and Joint Canada
Osteoporosis Canada
Association of Ontario Health Centres
ParticipACTION
Arthritis Society
AFHTO, UTOPIAN family physicians
CSEP, CCAA
AccuroEMR
CognisantMD
Public Health Units, Primary Care HCPs

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