Everything we know about FINGER Study

ELSEVIER

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The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER): Study design and progress

Miia Kivipelto[a,b,c,d,*], Alina Solomon[a,c,d], Satu Ahtiluoto[b], Tiia Ngandu[b,d], Jenni Lehtisalo[b], Riitta Antikainen[e,f], Lars Bäckman[c], Tuomo Hänninen[g], Antti Jula[b], Tiina Laatikainen[b], Jaana Lindström[b], Francesca Mangialasche[c], Aulikki Nissinen[b], Teemu Paajanen[a], Satu Pajala[h], Markku Peltonen[b], Rainer Rauramaa[i], Anna Stigsdotter-Neely[j], Timo Strandberg[e,k], Jaakko Tuomilehto[l,m], Hilkka Soininen[a,g]

[a]*Department of Neurology, Institute of Clinical Medicine, University of Eastern Finland, Kuopio, Finland*
[b]*Department of Chronic Disease Prevention, National Institute for Health and Welfare, Helsinki, Finland*
[c]*Aging Research Center, Karolinska Institutet, Stockholm, Sweden*
[d]*Alzheimer's Disease Research Center, Karolinska Institutet, Stockholm, Sweden*
[e]*Institute of Health Sciences/Geriatrics, University of Oulu, and University Hospital, Oulu, Finland*
[f]*Oulu City Hospital, Oulu, Finland*
[g]*Department of Neurology, Kuopio University Hospital, Kuopio, Finland*
[h]*Department of Lifestyle and Participation, National Institute for Health and Welfare, Helsinki, Finland*
[i]*Kuopio Research Institute of Exercise Medicine, Kuopio, Finland*
[j]*Department of Psychology, Umeå University, Umeå, Sweden*
[k]*Department of Medicine, Geriatric Clinic, University of Helsinki and University Hospital, Helsinki, Finland*

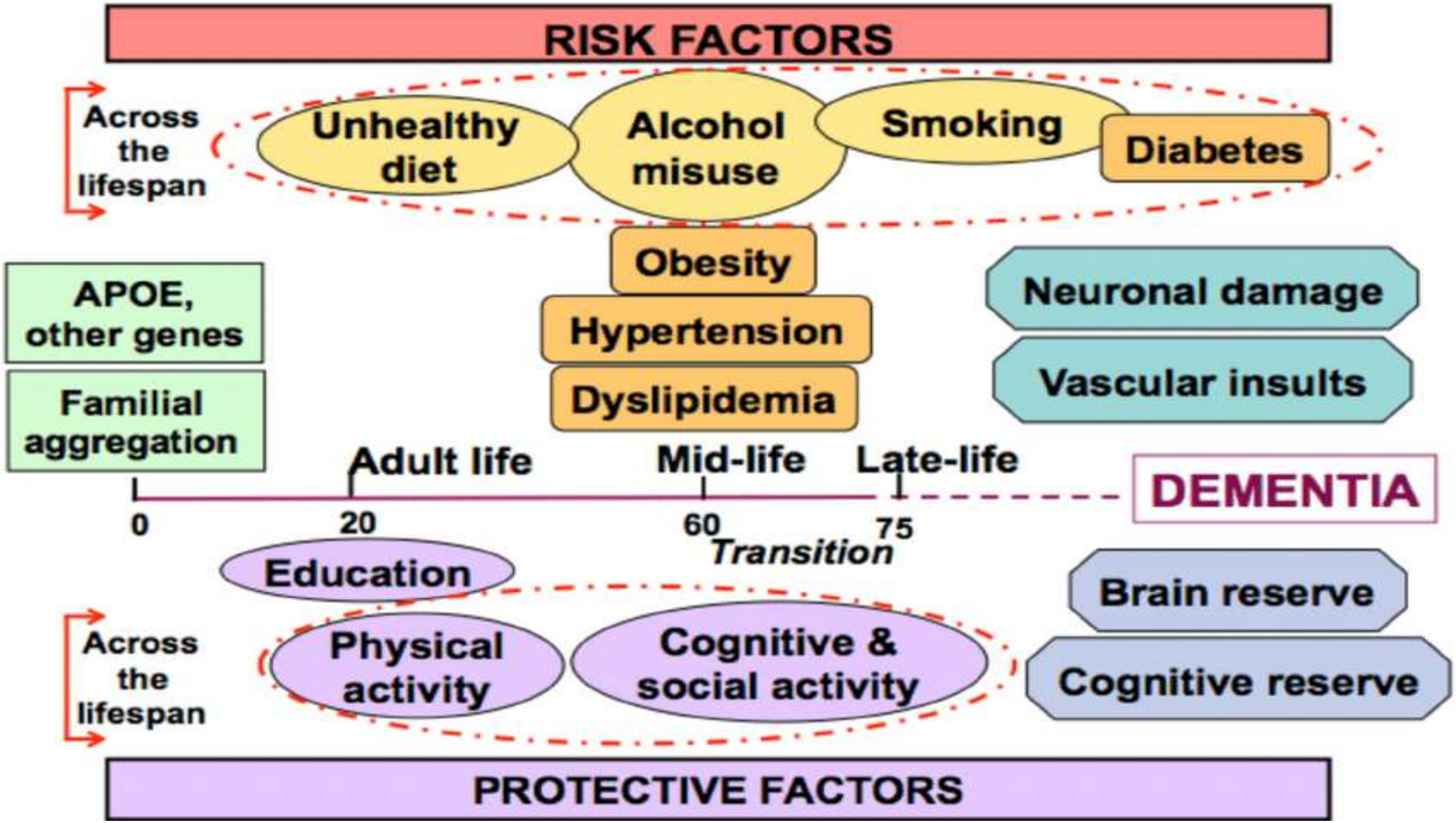
RISK FACTORS
Across the lifespan
Unhealthy diet
Alcohol misuse
Smoking
Diabetes
Obesity
Hypertension
Dyslipidemia
APOE, other genes
Familial aggregation
Neuronal damage
Vascular insults
Adult life
Mid-life
Late-life
DEMENTIA
0
20
60
75
Transition
Education
Across the lifespan
Physical activity
Cognitive & social activity
Brain reserve
Cognitive reserve
PROTECTIVE FACTORS

Table 1. Risk and protective factors for late-onset dementia and Alzheimer's disease (Table adapted from [5])

Risk factors	Protective factors
Age	**Genetic**
Genetic	Different genes (e.g. *APP*, *APOE* ε2) have been proposed (www.alzgene.org)
Familial aggregation	**Psychosocial factors**
APOE ε4	High education and socioeconomic status
Different genes (e.g., *CR1*, *PICALM*, *CLU*, *TREM2*, TOMM40) have been proposed (www.alzgene.org)	High work complexity
	Rich social network and social engagement
Vascular and metabolic	Mentally stimulating activity
Cerebrovascular lesions	**Lifestyle**
Cardiovascular diseases	Physical activity
Diabetes mellitus and pre-diabetes	Moderate alcohol intake
Midlife positive association but late-life negative association	**Diet**
Hypertension	Mediterranean diet
High BMI (overweight and obesity)	Polyunsaturated fatty acids and fish-related fats
High serum cholesterol	Vitamin B6, B12, folate
Lifestyle	Antioxidant vitamins (A, C, E)
Smoking	Vitamin D
High alcohol intake	**Drugs**
Diet	Antihypertensive drugs
Saturated fats	Statins
Homocysteine	HRT
Others	NSAIDs
Depression	
Traumatic brain injury	
Occupational exposure (extremely low-frequency electromagnetic field, heavy metals)	
Infective agents (Herpes Simplex Virus Type I, Clamydophila pneumonia, Spirochetes)	

Table 1
CAIDE Dementia Risk Score: Probability of dementia in 20 years according to midlife risk score categories

Risk factor		Points		
Age	<47 years	0		
	47–53 years	3	Total score	Dementia risk
	>53 years	4	0–5	1.0%
Education	>10 years	0	6–7	1.9%
	7–9 years	2	8–9	4.2%
	<9 years	3	10–11	7.4%
Gender	Female	0	12–15	16.4%
	Male	1		
Blood pressure	<140 mm Hg	0		
	>140 mm Hg	2		
Body mass index	<30 kg/m^2	0		
	>30 kg/m^2	2		
Total cholesterol	<6.5 mmol/L	0		
	>6.5 mmol/L	2		
Physical activity	Yes	0		
	No	1		

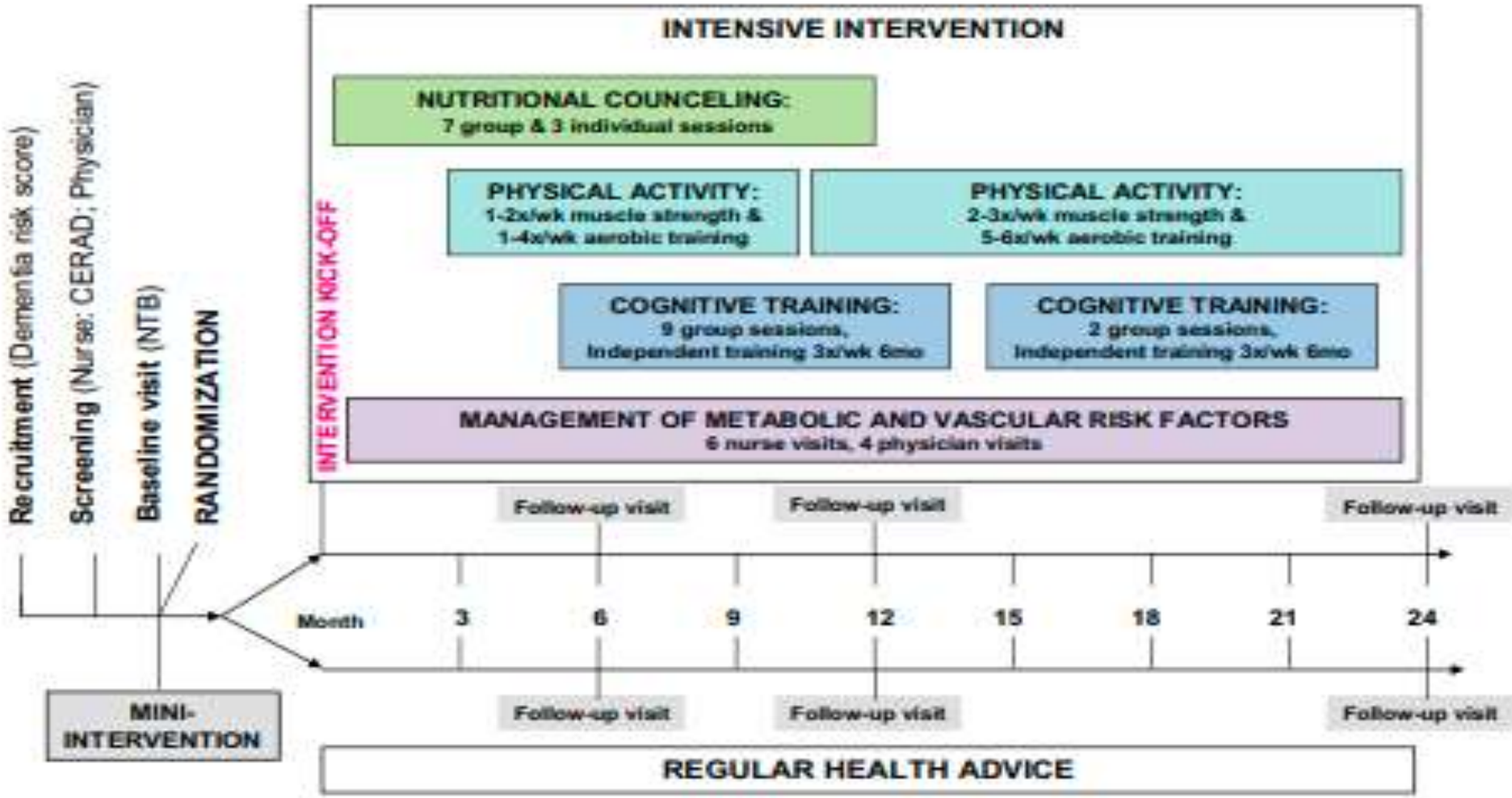

Fig. 2. FINGER protocol.

- Participants in the FINGER are 60–77 years of age at the beginning of the study
- CAIDE Dementia Risk Score : at least 6 points

- 1) Word List Memory Task (10 words ! 3) 19 words;
- (2) Word List Recall 75%; or
- (3) Mini-Mental State Examination (MMSE) 26/30 points

The nutritional intervention

- Individual counseling sessions (3 meetings with the study nutritionist during the first year)
- Group sessions (6 times during the first year and one to three times during the second year).
- Individual sessions include tailoring of the participant's daily diet.
- Group meetings provide more information and support for facilitating lifestyle changes, and include discussions and practical exercises, such as tools to assess one's own dietary behavior (e.g., tests to assess fat or fiber intake).
- The diet is based mainly on the Finnish Nutrition Recommendations

- Food consumption and nutrient intake is assessed by 3-day food records at baseline, 12 months, and 24 months.
- Additional information on specific foods (i.e., fish) is assessed by a food frequency questionnaire.

Table 2
Progression of the resistance and aerobic training program

	0–1 mo	1–3 mo	3–6 mo	6–24 mo
Resistance exercise				
Exercise frequency per week	1–2	1–2	2	2–3
Duration of exercise (min)	30–45	30–60	45–60	60
Number of muscle groups	8–10	8–10	8–10	8–10
Repetitions/set	8–15	10–20	8–20	8–20
Load % 1RM	40–50	60	70	70–80
Number of sets	2	2–3	1–3	2–3
Aerobic exercise				
Exercise frequency per week	2	2–3	3–4	3–5
Duration of exercise (min)	30–45	30–45	30–60	45–60

- The monitoring and maintenance of metabolic and vascular factors begins with a risk factor assessment according to the latest national evidence-based guidelines
- weight, blood pressure, hip, and waist circumference

- Cognitive training targets cognitive domains most sensitive to aging and with a central role in everyday situations (episodic memory, executive function, mental speed, and working memory).

- **Primary outcomes** : neuropsychological assessment
- **Secondary outcomes** : dementia / CVA/ Coronary artery disease /malnutrition
- Exploratory outcomes : MRI / PET/ CSF /…

- people in the FINGER trial didn’t have any cognitive impairment—
- they had increased risk for dementia based on risk factors but they were still cognitively intact.

- Both the intervention group and the so-called placebo group, where they gave regular health advice, improved during the two years.
- But the improvement was much higher in the intervention group, in all of the [cognitive] sub-domains:
- Executive function for [information] processing (how quickly people are able to do different tasks) and complex memory tasks.

- There were people who declined after two years.
- The risk of cognitive decline was 30% higher for the control group compared to the intervention group.


WORLD WIDE
FINGERS
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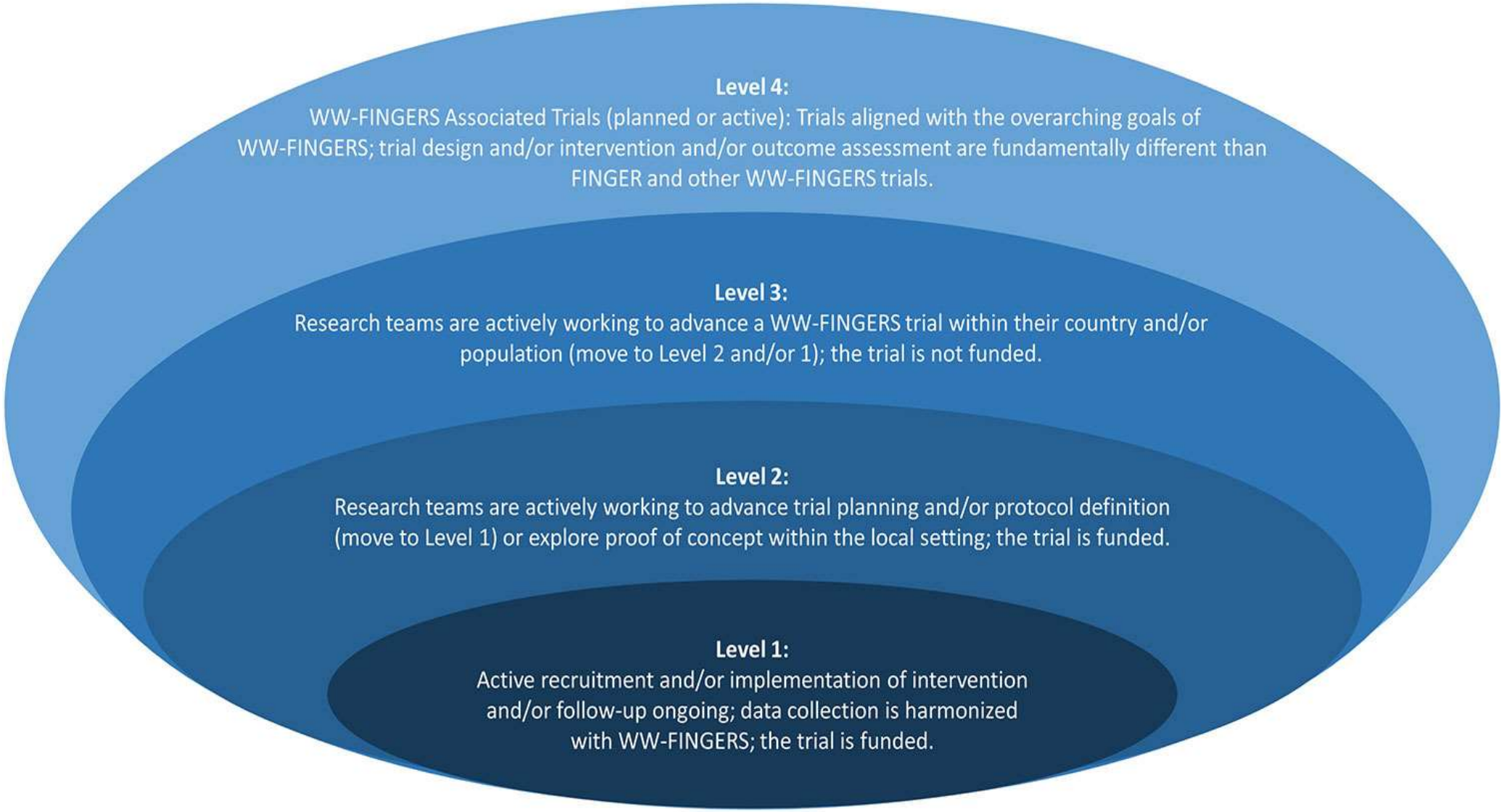
Level 4:
WW-FINGERS Associated Trials (planned or active): Trials aligned with the overarching goals of WW-FINGERS; trial design and/or intervention and/or outcome assessment are fundamentally different than FINGER and other WW-FINGERS trials.
Level 3:
Research teams are actively working to advance a WW-FINGERS trial within their country and/or population (move to Level 2 and/or 1); the trial is not funded.
Level 2:
Research teams are actively working to advance trial planning and/or protocol definition (move to Level 1) or explore proof of concept within the local setting; the trial is funded.
Level 1:
Active recruitment and/or implementation of intervention and/or follow-up ongoing; data collection is harmonized with WW-FINGERS; the trial is funded.

PROJECTS

- FINGER
- U.S. POINTER
- Age.Well.de: Germany
- AU-ARROW
- BRAIN DIABETES: Ireland
- GOIZ-ZAINDU: Spain
- India FINGER
- J-MINT: japan

- LatAm FINGERS
- Malaysia My AGELESS
- MIND-Admini: SWEDEN, FINLAND, FRANCE, GERMANY
- MIND-CHINA
- MYB: (AUSTRALIA)
- PENSA: Spain
- SINGER
- SUPERBRAIN: South Korean Study to Prevent Cognitive Impairment and Protect Brain Health Through Lifestyle Intervention
- THISCE: The Taiwan Health Promotion Intervention Study for Elders