Table 2
Summary of Interventions and Results of the included studies

Study	Outcomes	Duration of intervention	Intervention groups	Intervention	Results
Ng and al (17)	1st outcome: frailty score, reduction of frailty, measures of frailty components. 2nd outcome: self-reported hospitalizations, self-reported falls, IADL[k] and ADL[l]	24 weeks	Physical training Nutritional Intervention Cognition Combination Intervention Control group	Strength and Balance training Nutritional Supplement Cognitive Training Physical, Cognitive and Nutritional Intervention Standard care and placebo nutritional supplements	Frailty status and score over 12 months were reduced in all groups, including control group, but were significant higher in nutritional, cognition, physical and combination groups. This effects were observed at 3 and 6 months and were maintained at 12 months. Improvements in physical frailty domains were most evident for knee strength (physical, cognitive, and combination treatment), physical activity (nutritional intervention), gait speed (physical intervention), and energy (combination intervention). No differences in secondary outcomes.
Kim and al (18)	Frailty status, Frailty reversal rate, frailty criterion, personal medical history, body composition assessment, grip strength, isometric knee extension, walking speed, haematological parameters	12 weeks	Exercise Milk Fat Globule Membrane (MFGM) supplementation Exercise and MFGM Placebo	Strength, balance and gait training MFGM supplementation Exercise training and MFGM supplementation Milk powder supplementation	Significant group and time interaction were observed for waking speed and timed up and go. Several frailty components were reversal (weight loss, low physical activity, slow walking speed) but low muscle strength did not significantly change. Ex+MFGM group had a significantly higher frailty reversal rate than MFGM or placebo groups at post-operation, and the reversal frailty was significantly greater in the Ex+MFGM than Ex+placebo groups or placebo group at the follow-up.
Chan and al (19)	1st outcome: improvement of CHS_PCF by at least one category. 2nd outcome: the 5 indicators of CHS_PCF, MMSE[m] , PRIME-MD[n] , Bartel Index, health care resource utilization, EQ-5D, BMI[o], FFM[p], BMD[q], left one-leg-stand, dominant leg extension power and 25(OH) Vitamin D.	12 weeks	Exercise and Nutrition No Exercise and Nutrition Problem Solving Therapy No Problem Solving Therapy	Nutritional consultation, exercise training program and guidebook Pedagogic guide with nutritional and physical activity advices Guidebook and problem solving therapy Pedagogic guide with nutritional and physical activity advices	The Exercise and Nutrition intervention resulted in 3 months of frailty status improvement and 12 months on BMD and serum vitamin D.
Kwon and al (20)	1st outcome: muscle strength, balance, walking speed. 2nd outcome: Handgrip, SF-36, skeletal muscle mass and dietary variety score (DVS)	12 weeks	Exercise and Nutrition Physical Activity Control	Strength and balance training. Alimentation education. Products used enriched with vitamins D and protein Strength and balance training. General Health intervention.	The combined intervention had positive effects on several domains of HRQOL and handgrip strength in pre-frail elderly woman.
Rydwick and al (21)	Physical performance: Muscle strength, Balance, Walking speed, Personal activities of daily living, IADL. Nutritional measures: Body composition, IBM, FFM, Energy Intake.	12 weeks	Nutritional Physical Training Combined intervention Control	Individual advices on alimentary intake. Food regime if necessary. Aerobic, Strength and Balance training Physical and nutritional intervention General advices.	The combined nutritional and physical intervention showed positive effects on muscle strength only at the first follow-up (3 months). No significate difference for nutritional measures.
Luger and al (22)	Nutritional Status: Mini Assessment long form Frailty Status: Fried criteria (exhaustion, loss of appetite, weakness (ie.handgrip strength), slowness, and low physical activity).	12 weeks	Physical and Nutritional Intervention Social Support	Guidebook. Without supplement. Home-based physical training focus on muscular strength. Discussion on topics of interest except on nutritional and physical habits.	The combined nutritional, physical and social program can compensate malnutrition and frailty in community-dwelling older persons.
Berggren and al (23)	Morbidity, mortality and occurrence of falls, MMSE, the modified OBS[s] , GDS-15[t] , ADL, S-COVS[u], chair stand test and Berg's balance scale.	Hospitalization	Intervention Group Control Group	Nutrition: consultation with dietician. Meals enriched on proteins during 4 days minimum. Supplementation on calcium and D vitamins. Physical rehabilitation: Functional retraining focus on fall risk factor. Health Education: active prevention on fall risk factor. Normal postoperative routines	No significant effects on the portion of fallers, numbers of fallers, fractures or mortality could be detected after discharge from hospital. No statistically significant effects of intervention on depressive symptoms, and cognitive function.

Table 2 (continued)
Summary of Interventions and Results of the included studies

Study	Outcomes	Duration of intervention	Intervention groups	Intervention	Results
Lee and al. (37)	1st outcome: MMSE 2nd outcome: change of measures in participants' physical, cognitive and social activities.	18 months	Group A Group B Group C Group D Group E	Usual Care Bimonthly telephonic care management based on the manual. Monthly telephonic care management and educational materials. Bimonthly health worker-initiated counseling visits. Bimonthly counseling-visits in addition to rewards for good behavior (ie. Gold medals)	Engaging in cognitive activities, in combination with positive health behaviors, may be most beneficial in preserving cognitive abilities in community-dwelling older adults.
			The Mental Activity and Exercise (MAX) Trial		
Barnes and al. (36)	Cognition: verbal learning and memory, verbal fluency, processing speed, executive function, mental flexibility, inhibition, and visuospatial function, composite cognitive score.	12 weeks	Mental Activity-Intervention[v] (MA-I) Mental Activity-Control[w] (MA-C) Exercise intervention[x] (EX-I) Exercise Control[y] EX-C)	Videogames on computer designed to enhance the speed and accuracy of visual and auditory processing. DVDs of educational lectures on art, history and sciences. 10 min of warm-up, 30 min of aerobic exercise, 5 min of cooldown, 10 min of strength training, 5 min of stretching and relaxation.	Composite cognitive score improved significantly over time but did not differ between groups (MA-I vs. MA-C; EX-I vs EX-C or across all 4 groups).
			Frailty intervention Trail Study (FIT study)		
Cameron and al (15)	1st outcome: frailty, mobility (SPPB). 2nd outcome: falls, mood (GDS), health related quality of life (EQ-5D), mobility related disability (Goal attainment Scale and Life Space Assessment), and activity limitation (gait speed, and activity measure for post acute care)	12 months	Intervention Group	Nutrition: Meals delivered at home or food supplements. Psychological: follow-up with psychologist or psychiatrist if necessary. Physical: WEBB program with physiotherapists.	The intervention showed an improvement of SPPB, gait speed, and life space (people mobilised in the home and community; covered distance, degree of independence) at 12 months in intervention group versus control group. The combined intervention also resulted in a lower prevalence of frailty in the intervention group compared with the control group. No benefits were observed for GDS score and EQ-5D (quality of life and mood).
Cameron and al. (16)	1st outcome: Frailty and mobility 2nd outcome: hospitalizations and admissions to nursing care facilities, disability (Barthel Index), Quality of Life (EQ-5D), Psychological status (GDS) and deaths	12 months	Control Group	Usual care	The intervention resulted in a lower prevalence of frailty at 12 months in the intervention group. Parameters of mobility were relatively stable in the intervention group whereas they declined in control group. No major differences were observed to the secondary outcomes between groups.
Fairhall and al. (34)	Risk factor for falling (SPPB and 4m walk test) and fall rate (PPA[z]).	12 months			SPPB score and gait speed were significantly improved at 12 months but not at 3 months in the intervention group compared with the control group.
			Finnish Geriatric Intervention Study to prevent cognitive impairment and disability (FINGER study)		
Ngaudu and.al. (27)	1st outcome: change in cognitive performance measured with composite cognitive score. 2nd outcome: z score of neuropsychological domain for executive functioning, processing speed, and memory.	24 months	Intervention Group	Nutrition: food regime adapted in individual sessions and advices. Physical activity: strength and aerobic training. Cognition: computed-based cognitive training.	Intervention had positive effects on global composite cognitive score, composite score of executive function and processing speed, BMI, dietary habits and physical activity. No benefits were observed on composite memory score, except especially on complex memory tasks.
Kulmala and al. (35)	Activities of Daily Living Disability: BADL[aa], IADL. Physical performance: SPPB	24 months			The ADL score increased in control group whereas it was relatively stable in intervention group at 12 and 24 months.
Stephen and al. (28)	Cognitive outcome: change of composite neuropsychological score. Composite score of executive functioning, processing speed, and memory score. MRI: Regional brain volumes and cortical thincknesses, WML volume	24 months	Control group	Regular health advice	The FINGER MRI sub-study did not show significant differences on change in regional brain volumes, regional cortical thicknesses or WML volume between both groups after 2 years in at general risk (cardiovascular, metabolic and dementia) elderly adults.

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Lee and al. (37)	1st outcome: MMSE 2nd outcome: change of measures in participants' physical, cognitive and social activities.	18 months	Group A Group B Group C Group D Group E	Usual Care Bimonthly telephonic care management based on the manual. Monthly telephonic care management and educational materials. Bimonthly health worker-initiated counseling visits. Bimonthly counseling-visits in addition to rewards for good behavior (ie. Gold medals)	Engaging in cognitive activities, in combination with positive health behaviors, may be most beneficial in preserving cognitive abilities in community-dwelling older adults.
			The Mental Activity and Exercise (MAX) Trial		
Barnes and al. (36)	Cognition: verbal learning and memory, verbal fluency, processing speed, executive function, mental flexibility, inhibition, and visuospatial function, composite cognitive score.	12 weeks	Mental Activity-Intervention[v] (MA-I) Mental Activity-Control[w] (MA-C) Exercise intervention[x] (EX-I) Exercise Control[y] EX-C)	Videogames on computer designed to enhance the speed and accuracy of visual and auditory processing. DVDs of educational lectures on art, history and sciences. 10 min of warm-up, 30 min of aerobic exercise, 5 min of cooldown, 10 min of strength training, 5 min of stretching and relaxation.	Composite cognitive score improved significantly over time but did not differ between groups (MA-I vs. MA-C; EX-I vs EX-C or across all 4 groups).
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