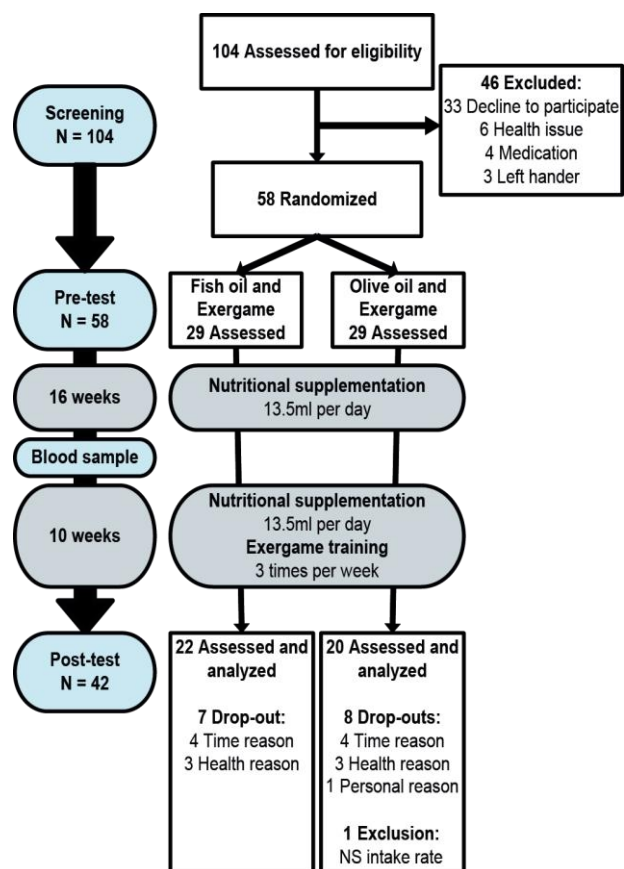


## Participant Flow Diagram



## Baseline Characteristics

**Table 1. Demographic characteristics, screening values, and intervention details.**

	Fish oil and Exergame (N=22)	Olive oil and Exergame (N=20)	z	p	r
<b>Baseline</b>					
Gender [F/M]	[10/ 12]	[13/ 7]			
Age [years]	67 (65.75; 72.50)	67.50 (65.25; 75.75)	-0.537	0.592	-0.08
Weight [kg]	76.5 (62.5; 85.25)	74.50 (61.75; 81.50)	-0.554	0.579	-0.09
Height [m]	1.70 (1.62; 1.80)	1.69 (1.60; 1.76)	-1.148	0.251	-0.18
Body Mass Index	25.66 (22.80; 27.32)	25.49 (23.47; 27.93)	-0.302	0.762	-0.05
Mini Mental Status	28.5 (27.75; 29.25)	28 (28; 29)	-0.495	0.620	-0.08
Geriatric Depression Scale	1 (0; 3)	0 (0; 1)	-2.209	0.027*	-0.34
Short-FES-I	8 (7; 9.25)	7 (7; 8.75)	-1.203	0.229	-0.19
Resting motor threshold	42 (40; 45)	43.5 (38.5; 50)	-0.540	0.589	-0.13
<b>Intervention</b>					
Training participation (100% = 30 sessions)	27 (23; 29)	26 (22.25; 27)	-0.881	0.378	-0.14
Supplementation intake [%]	98.2 (94.5; 100)	96.4 (91.8; 99.5)	-0.840	0.401	-0.13

Data are number of participants or median (interquartile range) values as indicated. p-values were calculated using Mann-Whitney U test. p-values are two-tailed. \*p < 0.05. For effect size r; r = 0.1 is considered a small effect, around 0.3 a medium effect, and 0.5 and above a large effect. FES-I: falls efficacy scale international.

## Outcome Measures

### Primary Outcomes

**Table 2. Time × group interaction and time main effects of repeated measures Puri & Sen-analysis of ranked data for motor evoked potentials and recruitment curve slopes.**

	Interaction effect (time × intervention)					Main effect (time, pre vs. post)				
	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$
<b>Stimulation intensity</b>										
90% RTM	0.002	0.084	0.776	< 0.01	< 0.01	0.021	0.831	0.369	0.02	< 0.01
100% RTM	0.015	0.611	0.441	0.02	< 0.01	0.015	0.611	0.441	0.02	< 0.01
110% RTM	0.019	0.745	0.395	0.02	< 0.01	0.125	4.993	0.023*	0.12	0.02
120% RTM	0.011	0.428	0.520	0.01	< 0.01	0.091	3.623	0.056	0.09	0.02
130% RTM	0.001	0.026	0.875	< 0.01	< 0.01	0.000	0.002	0.963	< 0.01	< 0.01
140% RTM	0.038	1.522	0.222	0.04	0.02	0.018	0.730	0.400	0.02	0.01
<b>Recruitment curve slope</b>										
	0.027	1.080	0.307	0.03	0.01	0.010	0.400	0.307	0.01	< 0.01

N = 41; fish oil and exergame group N = 21 and olive oil and exergame group N = 20. \*p < 0.05. p-values are two-tailed.  $\eta_p^2$ : effect size.  $\eta_G^2$ : effect size.

**Table 3. Time × group interaction and time main effects of repeated measures Puri & Sen-analysis of ranked data for response-locked potentials.**

	Interaction effect (time × intervention)					Main effect (time, pre vs. post)				
	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$
<b>Positive peak before response onset</b>										
<b>Fp1</b>	0.001	0.031	0.863	< 0.01	< 0.01	0.127	3.922	0.046*	0.13	0.03
<b>Fp2</b>	0.018	0.572	0.458	0.02	< 0.01	0.189	6.054	0.011*	0.19	0.04
<b>Negative peak after response onset</b>										
<b>Fp1</b>	< 0.001	< 0.001	0.995	< 0.01	< 0.01	0.123	3.816	0.049*	0.12	0.03
<b>Fp2</b>	0.022	0.698	0.412	0.02	< 0.01	0.137	4.393	0.034*	0.14	0.03

For Fp1 N = 32; fish oil and exergame group N = 17 and olive oil and exergame group N = 15. For Fp2 N = 33; fish oil and exergame group N = 18 and olive oil and exergame group N = 15. \*p < 0.05. p-values are two-tailed.  $\eta_p^2$ : effect size.  $\eta_G^2$ : effect size.

## Secondary Outcomes

**Table 4. Time × group interaction and time main effects of repeated measures Puri & Sen-analysis of ranked data for working memory and divided attention test.**

	Interaction effect (time × intervention)					Main effect (time, pre vs. post)				
	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$
<b>Working memory</b>										
Reaction time	0.047	1.930	0.168	0.05	0.01	0.040	1.659	0.202	0.04	0.01
Errors	0.020	0.818	0.372	0.02	< 0.01	0.003	0.137	0.716	< 0.01	< 0.01
Omissions	0.029	1.201	0.280	0.03	0.01	0.027	1.095	0.301	0.03	0.01
<b>Divided attention</b>										
Reaction time auditory	0.003	0.126	0.727	< 0.01	< 0.01	0.067	2.727	0.099	0.07	0.01
Reaction time visual	0.011	0.447	0.511	0.01	< 0.01	0.014	0.586	0.451	0.01	< 0.01
Errors	0.056	2.312	0.130	0.06	0.02	0.334	13.700	<0.001*	0.33	0.14
Omissions	0.006	0.257	0.618	0.01	< 0.01	0.054	2.227	0.137	0.05	0.02

N = 42; fish oil and exergame N = 22 and olive oil and exergame N = 20. \*p < 0.05. p-values are two-tailed.  $\eta_p^2$ : effect size.  $\eta_G^2$ : effect size.

**Table 5. Time × group interaction and time main effects of repeated measures Puri & Sen-analysis of ranked data for spatio-temporal gait parameters.**

	Interaction effect (time × intervention)					Main effect (time, pre vs. post)				
	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$
<b>Speed</b>										
Single-task	< 0.001	0.012	0.915	< 0.01	< 0.01	0.002	0.068	0.798	< 0.01	< 0.01
Dual-task	0.005	0.214	0.649	0.01	< 0.01	0.151	6.182	<b>0.011*</b>	0.15	0.02
Dual-task cost	< 0.001	0.013	0.910	< 0.01	< 0.01	0.161	6.603	<b>0.008*</b>	0.16	0.04
<b>Cadence</b>										
Single-task	0.010	0.419	0.524	0.01	< 0.01	0.013	0.521	0.477	0.01	< 0.01
Dual-task	< 0.001	0.018	0.895	< 0.01	< 0.01	0.102	4.179	<b>0.039*</b>	0.10	0.02
Dual-task cost	0.002	0.084	0.775	< 0.01	< 0.01	0.124	5.078	<b>0.022*</b>	0.12	0.03
<b>Stride length</b>										
Single task	0.003	0.103	0.753	< 0.01	< 0.01	0.002	0.085	0.774	< 0.01	< 0.01
Dual-task	0.010	0.393	0.537	0.01	< 0.01	0.177	7.250	<b>0.006*</b>	0.18	0.01
Dual-task cost	0.008	0.344	0.564	0.01	< 0.01	0.123	5.036	<b>0.023*</b>	0.12	0.02
<b>Toe clearance</b>										
Single-task	0.005	0.189	0.669	< 0.01	< 0.01	0.160	6.551	<b>0.009*</b>	0.16	0.04
Dual-task <sup>1</sup>	0.027	1.122	0.301	0.03	0.01	0.177	7.252	<b>0.006*</b>	0.18	0.06
Dual-task cost <sup>1</sup>	0.071	2.928	0.091	0.07	0.03	0.004	0.154	0.703	< 0.01	< 0.01

N = 42; fish oil and exergame N = 22 and olive oil and exergame N = 20. \*p < 0.05. p-values are two-tailed.  $\eta_p^2$ : effect size.  $\eta_G^2$ : effect size. <sup>1</sup>N = 41.

## Control Outcome

**Table 6. Time × group interaction effects of repeated measures Puri & Sen-analysis of ranked data for blood values.**

	$r^2$	L	p	$\eta_p^2$	$\eta_G^2$
Omega-3 Index	0.667	27.349	< 0.001*	0.64	0.30
EPA	0.645	26.445	< 0.001*	0.63	0.30
DHA	0.596	24.436	< 0.001*	0.56	0.23
Omega-3 fatty acids	0.627	25.707	< 0.001*	0.61	0.28
Omega-6 fatty acids	0.388	15.908	< 0.001*	0.36	0.19
Oleic acid	0.194	7.954	0.015*	0.09	0.02

N = 42; fish oil and exergame N = 22 and olive oil and exergame N = 20. \*p < 0.05, p-values are two-tailed.  $\eta_G^2$ : effect size. DHA = docosahexaenoic acid, EPA = eicosapentaenoic acid.

## **Adverse Events**

There were no adverse events associated with this trial.