3rd INTERNATIONAL CONFERENCE ON SAFER FALLING FOR OLDER PEOPLE THROUGH JUDO

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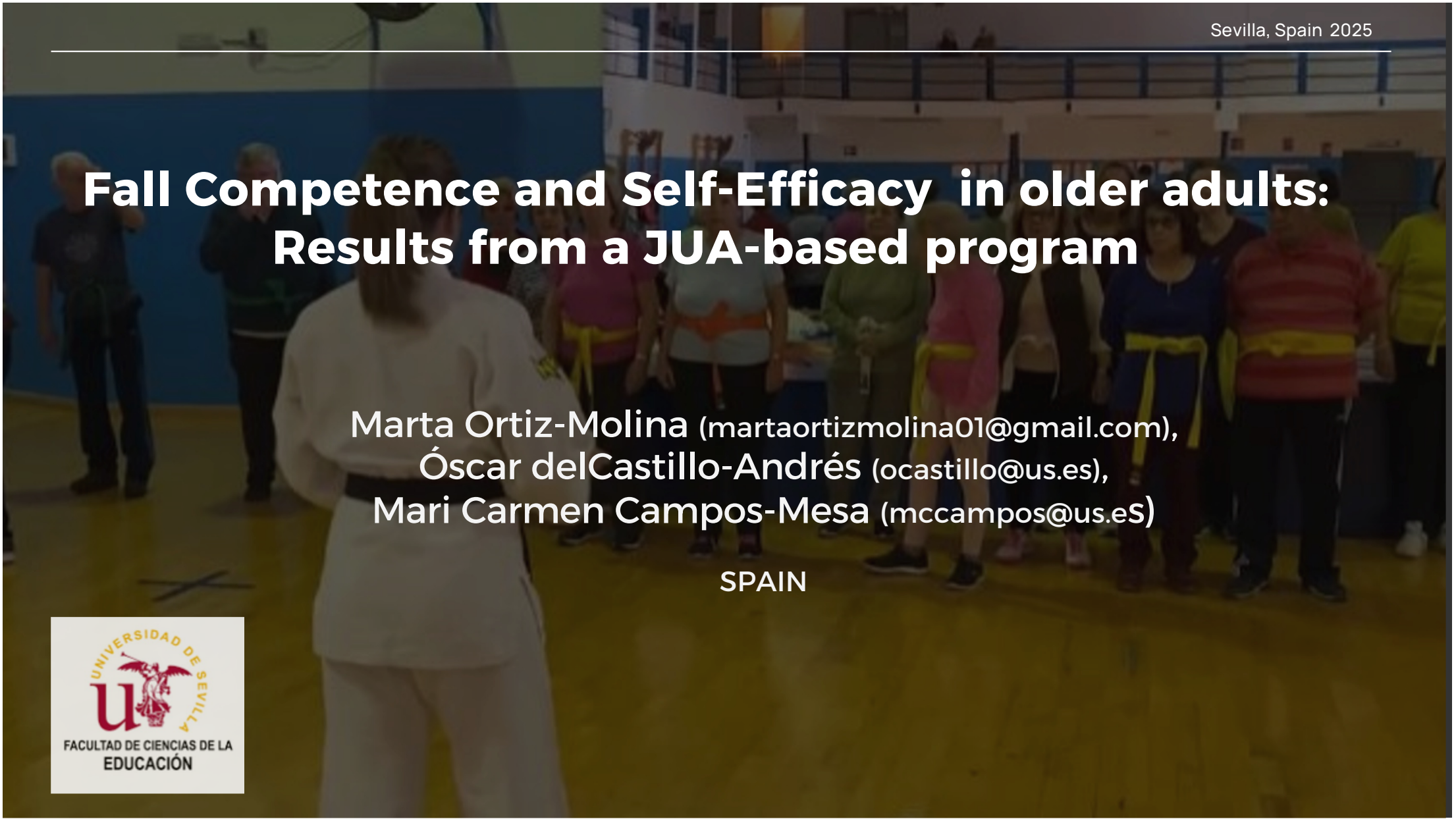
Fall Competence and Self-Efficacy in older adults: Results from a JUA-based program

Research Group:
Research in Physical Activity, Quality of Life, and Physical Education



Fall Competence and Self-Efficacy in older adults: Results from a JUA-based program

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SPAIN

FACULTAD DE CIENCIAS DE LA EDUCACIÓN

1: Theoretical Foundations

1. Theoretical Foundations

Dissemination and regional impact

- Disseminate the program across multiple forums
- Presented in Málaga, Carmona, Sevilla.
- Supported by public institutions and through the Mentor 10 Project.
- Governmental initiative, promote programs for older adults


M10


M10

1. Theoretical Foundations

Population ageing and fall prevention

- **Ageing situation**
  - Increased life expectancy and reduced birth rate.
  - WHO: 1 in every 6 people will be over 60 years old by 2030.
- **Health impacts**
  - Biggest public health challenges..
  - 68,400 fatal falls annually.
  - Frequent, risk of injury and affect social, psychological and physical.
- **Risk factors**
  - Decreases in physical and cognitive function.
  - Frailty significantly increases fall risk.
  - Increase muscle loss.
  - Importance of these programs to reduce fall risk.

(Schumacher et al., 2024; World Health Organization, 2022; López-Otín et al., 2023; Landinez Parra et al., 2012; World Health Organization, 2021; DelCastillo-Andrés et al., 2018; Perracini et al., 2020; Soengas, 2016; Campos-Mesa et al., 2022)

1. Theoretical Foundations

Programs results and benefits

Prevention of frailty.

Ability to land safely during controlled falls and ability to get up from the floor.

Reduced risk of falls and accidents.

Enhanced strength, balance and mobility.

Reduced fear of falling and increased confidence.

Positive impact on physical, social and psychological health.

(Campos-Mesa et al., 2022; Arkkukangas et al., 2020; Jadczak et al., 2023; Sakuyama et al., 2021; Latest Canada, 2023; Judo Flanders, n.d.; Callan et al., 2022; Weerdesteyn et al., 2006; Ciaccioni et al., 2022)

2: Objectives

02. Objectives

General Objective

- To assess and implement the **effects of a fall-teaching** workshop based on the JUA program in a group of older adults within maintenance gymnastics classes.

Specific Objective

- To measure **fall competence** and **physical performance** using the Strömqvist-Bååthe Test, evaluating **self-efficacy, motor skill and fall technique** in older adults after a fall-teaching workshop based on the JUA program.

3: Design and Methodology

3. Design and Methodology

Design

- Experimental: Control Group (CG) and Experimental Group (EG), with pre- and post-intervention measurements.
- Sample selected non-probabilistically and incidentally (convenience sampling).

Sample Characteristics

Variable	**EG** (n=22)	**CG** (n=23)
Age	63 a 90 years(75.77 ± 7.12)	61 a 83 years (75.96 ± 5.09)
BMI	26.60-44.55 kg/m² (35.07 ± 4.71)	26.24-43.37 kg/m² (33 ± 3.98)
Muscle mass	15.3%-33.1% (22.23 ± 4.17%)	16.1%-29.1% (21.14 ± 3.82%)
Marital status	17.4% widower and single 26.1% married and accompanied	20.8% widower and single 12.5% married and accompanied
Profession	21.7% housewives 8.7% retired teacher/madamss Comercials, nurses and cleaners	58.3% housewives Teachers, professors and cleaners

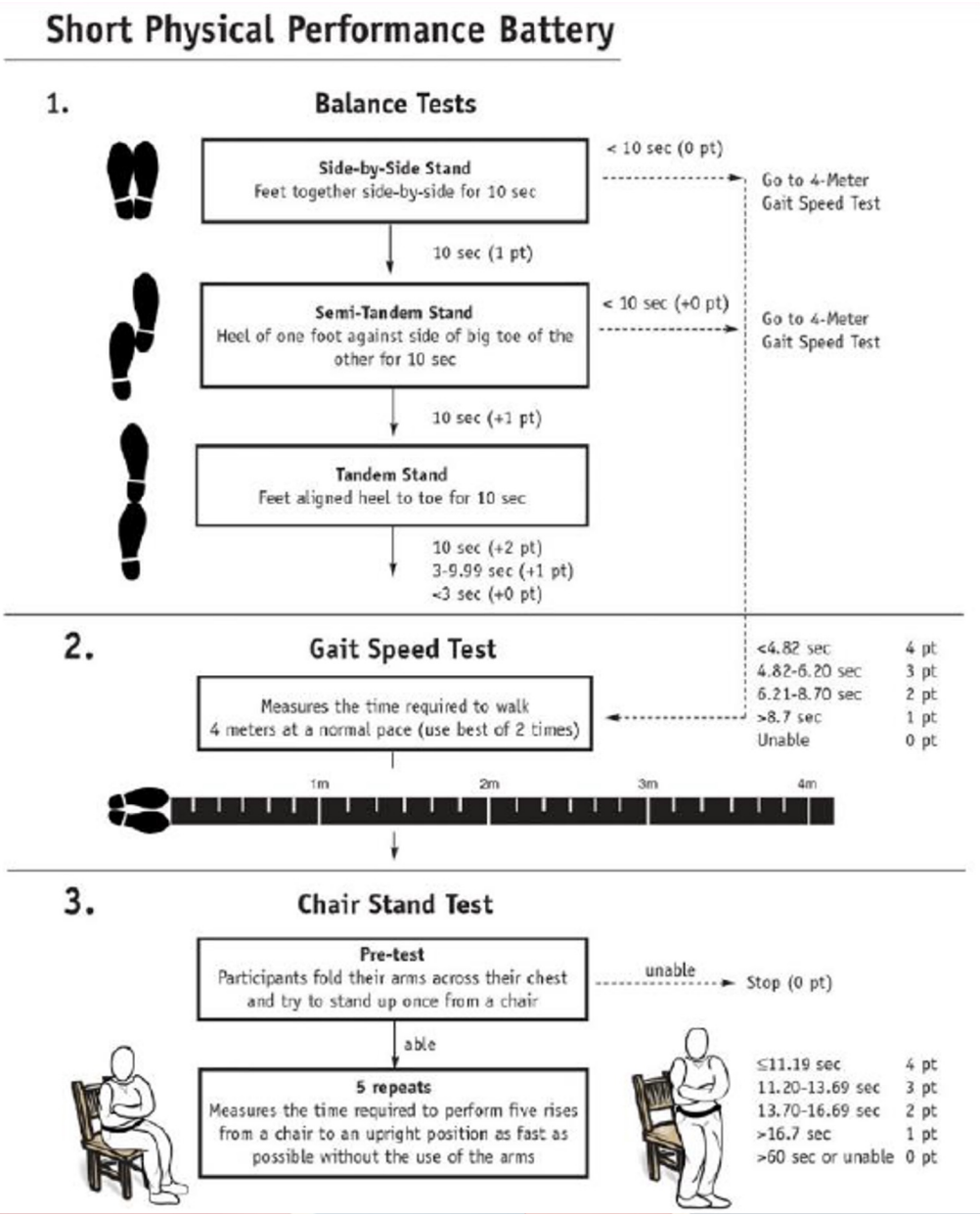
3. Design and Methodology

Inclusion and exclusion criteria

- **Inclusion Criteria**:
  - 60 years or older
  - Men and women
  - No pre-existing pathologies
  - Ability to perform exercise without medical restrictions

- **Exclusion Criteria**:
  - Medical reasons contraindicating exercise
  - Congestive heart failure
  - Chest pain, dizziness or angina during exercise
  - Uncontrolled hypertension (160/100 mmHg)

Participants received detailed information about the intervention (signed informed consent and image-use authorisation)



3. Design and Methodology

Instruments: Measure Physical performance and Fall competence

1. **Physical performance: Short Physical Performance Battery (SPPB Test)**

- **Balance**
  - Three positions (feet together, semi-tandem, tandem).
- **Gait speed**
  - Time to walk 4 metres.
- **Lower-limb strength**
  - Five chair stands.

Score: 0–4 for each test. Max 12 points.

(de Fátima Ribeiro Silva et al., 2021)

3. Design and Methodology

2. Fall competence: Strömqvist-Bååthe Test (SBFC)

- **Self-efficacy**
  - The subject is asked: “How confident are you…?”
  - The response determines whether the test is performed. This procedure is followed for both backward (BF) and lateral (LF) falls.

- **Motor skills and Falling technique**
  - Once the subject has demonstrated self-efficacy, the test is administered. Both BF and LF are evaluated.

Score: 0–4 for each test. Max 8 points.

(Arkkukangas et al., 2022)

Name/Code:_____ Date:_____ Testleader:_____ Place:_____

"Strömqvist - Bathe Test" - measuring Falling Competence - Sideways:

1a) How confident are you laying down on your side, lift your head and roll from side to side?

- ☐ YES, SURE (go to 1b)
- ☐ UNSURE (stop test)
- ☐ NO/REFUSES (stop test)

1b) Performs the exercise - Lays down on the side, can lift head and roll from side to side.

- ☐ Successful (go to 2a)
- ☐ Cannot get down on the mat (stop test)
- ☐ Cannot lift the head off the mat (stop test)
- ☐ Cannot roll from side to side (stop test)
- ☐ Cannot get up from the mat independently (stop test)

2a) How confident are you sitting down on your buttocks (legs forward) and fall sideways?

- ☐ YES, SURE (go to 2b.
- ☐ UNSURE (stop test)
- ☐ NO/REFUSES (stop test)

2b) Performs the exercise - Falls sideways from sitting down (legs forward) no instruction given:

- ☐ Successful (go to 3a)
- ☐ Puts down hand/hands (stop test)
- ☐ Does not hold up head (stop test)
- ☐ Falls on stomach (stop test)
- ☐ Hits the shoulder (stop test)
- ☐ Falls flat on the back (stop test)
- ☐ Other injury prone maneuver: (describe)_____(stop test)

3a) How confident are you falling sideways from a squatting or one kneeling position (one knee up)?

- ☐ YES, SURE (go to 3b)
- ☐ UNSURE (stop test)
- ☐ NO/REFUSES (stop test)

3b) Falls sideways from squatting or kneeling position, no instruction given:

- ☐ Successful (go to 4a)
- ☐ Puts down hand/hands (stop test)
- ☐ Does not hold up the head (stop test)
- ☐ Falls on the stomach (stop test)
- ☐ Hits the shoulder (stop test)
- ☐ Falls flat on the back (stop test)
- ☐ Other injury prone maneuver: (describe)_____(stop test)

4a) How confident are you falling sideways from a standing up position?

- ☐ YES, SURE (go to 4b)
- ☐ UNSURE (stop test)
- ☐ NO/REFUSES (stop test)

Name/Code:_____ Date:_____ Testleader:_____ Place:_____

4b) Stands up and falls sideways, no instruction is given:

- ☐ Successful (=4p)
- ☐ Puts down hand/hands (stop test)
- ☐ Does not hold up the head (stop test)
- ☐ Falls on the stomach (stop test)
- ☐ Hits the shoulder (stop test)
- ☐ Falls flat on the back (stop test)
- ☐ Does not bend leg/s and lower center of gravity (stop test)
- ☐ Other injury prone maneuver: (describe)_____(stop test)

POINTS BACKWARD FALL_____

Scale:

0 point = Fails exercise 1a = Refuses, unsure or cannot lay down on the floor and rise independently or fails 1b.

1 point = Successful Exercise 1b = Can successfully lay down on the floor and rise independently but fails 2a or 2b.

2 points = Successful Exercise 2b = Can successfully fall backwards from sitting down on the floor but fails 3a or 3b

3 points = Successful Exercise 3b = Can successfully fall backwards from a squatting position but fails 4a or 4b.

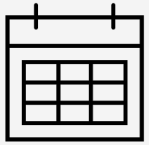
4 points = Can successfully fall backwards from a standing position without any harmful maneuver (exercise 4b).

3. Design and Methodology

Intervention

Sport center
Tiro de Línea,
Seville

Black belt 1º
DAN



March -
May 2024

12 sesions
3 per week

60 minutes

3. Design and Methodology

Data Analysis

- Software: SPSS v.29

- Descriptive analysis to determine sample characteristics
- Normality test to assess data distribution
- Wilcoxon test (non-parametric): to compare related groups
- Significance at $p < 0.05$

4:

Results and Discussion

PUNCTUATIONS SPPB AND SBCT

	EG					CG				
Variable	**Pre-Test**		**Post-Test**			**Pre-Test**		**Post-Test**		
	$\bar{x}$ **(DS)**	**Min-Max**	$\bar{x}$ **(DS)**	**Min-Max**	**p-value**	$\bar{x}$ **(DS)**	**Min-Max**	$\bar{x}$ **(DS)**	**Min-Máx**	**p-value**
Balance	1,82 (0,58)	0-2	1,95 (0,21)	1-2	,276	1,74 (0,44)	1-2	1,78 (0,42)	1-2	,655
Gait speed	4,00 (0,00)	4-4	4,00 (0,00)	4-4	1,000	3,96 (0,20)	3-4	4,00 (0,00)	4-4	,317
Lower-limb strength	3,32 (1,04)	1-4	3,86 (0,46)	2-4	,010	3,09 (1,16)	1-4	3,74 (0,54)	2-4	,008
Motor skills and falling technique BF	0,91 (0,75)	0-2	2,64 (1,62)	0-4	<,001	0,96 (1,10)	0-4	0,48 (0,593)	0-4	,053
Motor skills and falling technique LF	1,05 (0,89)	0-3	2,64 (1,62)	0-4	<,001	0,70 (1,02)	0-4	0,41 (0,50)	0-1	,131

Note: $\bar{x}$ = mean, SD = standard deviation, $p<0.05$ in the Wilcoxon test, BF = Backward fall, LF = Lateral fall.

Randomized Controlled Trial

Int J Environ Res Public Health. 2022 Jun 16;19(12):7370. doi: 10.3390/ijerph19127370.

High Challenge Exercise and Learning Safe Landing Strategies among Community-Dwelling Older Adults: A Randomized Controlled Trial

Marina Arkkukangas [1 2 3], Karin Strömqvist Bååthe [1], Anna Ekholm [3], Michail Tonkonogi [1]

J Frailty Aging. 2024;13(1):1-9. doi: 10.14283/jfa.2023.17.

A Judo-Based Exercise Program to Reduce Falls and Frailty Risk in Community-Dwelling Older Adults: A Feasibility Study

A D Jadczak [1], M Verma, M Headland, G Tucker, R Visvanathan

4. Results y Discussion

Fall Competence (SBCT): Self-efficacy

How confident are you…?

EG: 56,5% al 73,9%
CG: 37,5%

EG: 8,7% al 60,9%
CG: 4,2%

EG: 4,3% al 56,5%
CG: 4,2%

MOTOR SKILLS AND FALLING TECHNIQUE (SBCT)

	EG				GG			
Variable	**Pre-Test *N* (%)**		***Post-Test N* (%)**		**Pre-Test *N* (%)**		***Post-Test N* (%)**	
	Yes	**No**	**Yes**	**No**	**Yes**	**No**	**Yes**	**No**
1b_BF	15 (65,2)	5 (21,7)	17 (73,9)	-	13 (54,2)	-	9 (37,5)	2 (8,3)
2b_BF	5 (21,7)	8 (34,8)	17 (73,9)	-	6 (25,0)	3 (12,5)	1 (4,2)	8 (33,3)
3b_BF	20 (87,0)	2 (8,7)	14 (60,9)	-	2 (8,3)	-	-	1 (4,2)
4b_BF	-	-	10 (43,5)	3 (13,0)	1 (4,2)	-	-	-
1b_LF	15 (65,2)	3 (13,0)	17 (73,9)	-	10 (41,7)	1 (4,2)	8 (33,3)	3 (12,5)
2b_LF	7 (30,4)	5 (21,7)	17 (73,9)	-	7 (29,2)	3 (12,5)	-	8 (33,3)
3b_LF	1 (4,3)	1 (4,3)	14 (60,9)	1 (4,3)	1 (4,2)	-	-	-
4b_LF	-	-	10 (43,5)	3 (13,0)	1 (4,2)	-	-	-

Note: 1bBF = Lies on back, lifts head off the mat, places arms at sides, and then gets back up from the floor without assistance. 2bBF = Falls backward from a sitting position (legs forward) without instructions given. 3bBF = Falls backward from a squatting position (no instructions given). 4bBF = Falls backward from a standing position (no instructions given). 1bLF = Lies on side, can lift head and roll from side to side. 2bLF = Falls sideways from a sitting position (legs forward) without instructions. 3bLF = Falls sideways from a squatting or kneeling position without instructions given. 4bLF = Gets up and falls sideways without instructions given.

Randomized Controlled Trial > Int J Environ Res Public Health. 2022 Jun 16;19(12):7370. doi: 10.3390/ijerph19127370.

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Marina Arkkukangas [1 2 3], Karin Strömqvist Bååthe [1], Anna Ekholm [3], Michail Tonkonogi [1]

> Prev Med Rep. 2020 May 19:19:101126. doi: 10.1016/j.pmedr.2020.101126. eCollection 2020 Sep.

Health promotion and prevention: The impact of specifically adapted judo-inspired training program on risk factors for falls among adults

Marina Arkkukangas [1 2 3 4], Karin Strömqvist Bååthe [5], Anna Ekholm [1], Michail Tonkonogi [5]

5: Conclusion

5. Conclusion

Significant improvement in fall competence

Improvements in balance and lower-limb strength

Effective intervention for fall prevention

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