Journal of
Ageing and Longevity

MDPI

Article

Fear of Falling and Eye–Segmental Coordination in Portuguese Elderly Participants Enrolled in a Community Physical Exercise Programme

Luis Coelho [1,2], Diogo Dias [1], Ricardo Canhoto [1], João Cruz [1], Diogo Monteiro [1,2,*], Miguel Jacinto [1,2], Raúl Antunes [1,2], Filipe Rodrigues [1,2], Nuno Amaro [1,2] and Rui Matos [1,2]

[1] ESECS, Polytechnic University of Leiria, 2411-901 Leiria, Portugal; coelho@ipleiria.pt (L.C.); diogocdias10@hotmail.com (D.D.); ricardo.canhoto2001@gmail.com (R.C.); joao.cruz@ipleiria.pt (J.C.); miguel.s.jacinto@ipleiria.pt (M.J.); raul.antunes@ipleiria.pt (R.A.); filipe.rodrigues@ipleiria.pt (F.R.); nuno.amaro@ipleiria.pt (N.A.); rui.matos@ipleiria.pt (R.M.)
[2] Research Center in Sports Sciences, Health Sciences and Human Development, CIDESD, 2411-901 Leiria, Portugal
* Correspondence: diogo.monteiro@ipleiria.pt

Abstract

The performance of 94 elderly subjects (73 women) (71.72 ± 5.64) in an eye–hand and eye–foot coordination test (TST) was correlated with fear of falling, based on the results obtained on the International Fall Efficacy Scale (FES-I), translated into Portuguese. The results revealed that, for the whole sample, there was a weak inverse association between the two ($\rho = -0.54$, $p < 0.05$). However, when analyzing the results by gender, this inverse association only remained significant for females ($\rho = -0.305$, $p < 0.01$), with no statistical significance for males. Thus, higher levels of fear of falling in the elderly female population were associated with lower levels of eye–segmental coordination. Additionally, men achieved significantly better results in TST than women (9.38 ± 4.70 vs. 4.67 ± 3.13, $p < 0.001$). Regarding fear of falling, women had significantly higher scores (23.51 ± 7.17 vs. 21.38 ± 7.59, $p < 0.05$). At the same time, elderly men had higher values of eye–segmental coordination, which may have reduced their fear of falling. Results highlight the importance of the maintenance of a healthy and active lifestyle through the lifespan and place TST as a potential proxy for detecting fear of falling in elderly populations, especially in women. Future studies would benefit from employing balanced, representative samples to validate and extend these results, particularly regarding possible sex-related patterns, as the study relied on a convenience sample that was markedly unbalanced in terms of sex.

Keywords: elderly; motor coordination; fear of falling

Academic Editor: Giuseppe Banfi

Received: 11 June 2026
Revised: 6 July 2026
Accepted: 8 July 2026
Published: 10 July 2026

1. Introduction

Falls are a global public health problem, especially among the elderly population. One third of the population over 65 falls every year [1,2]. According to the literature, injuries sustained from falls are a significant source of morbidity and mortality. In addition, falls have psychological consequences, such as loss of confidence and increased fear of falling, thus inhibiting physical functions and social interactions [3].

According to Rikli and Jones [4], for older adults to be able to perform everyday tasks independently, such as shopping, carrying objects and dressing, it is crucial that they maintain a minimum level of physical fitness.

Exercise is believed to be the best strategy for preventing falls in older adults. In addition, it prevents reduced mobility, balance, and muscle strength [5]. Physical exercise can also reduce the fear of falling and, consequently, ensure greater autonomy and a sense of well-being in older adults.

Losses in balance and motor coordination correlate with declines in strength and increases in the incidence of falls in older adults [6,7]. These combine to discourage an active lifestyle [8,9], triggering changes that are observed throughout the neuromuscular system after short periods of inactivity [10].

Asai et al. [11] reported that fear of falling (FoF) was associated with the occurrence of falls in community-dwelling older adults. Furthermore, Scheffer et al. [12], in a systematic review, reported that actual falling was one of the consequences of FoF reported in four studies. Kwan et al. [13], in another systematic review, reported the same in six studies. Lavedán et al. [14] reported that a substantial percentage of the subjects who had reported FoF at baseline had suffered at least one fall 24 months later. On this subject, Even-Zohar et al. [15], in a study with a sample of Israeli elderly people, found that FoF had a greater negative impact on the feeling of safety and quality of life than actually falling. Moreover, Liu et al. [16], following a 4-year longitudinal study, found that FoF was as important as multiple previous falls in limiting older adults' daily activities. Concerning fear of falling, Delbaere et al. [17] defined a cut-point to differentiate between low and high concern on the 16-items' International Fall Efficacy Scale (FES-I) (16–22 points, low concern; 23–64 points, high concern). Vitorino et al. [18], with a sample of 170 Portuguese elderly participants, reported a figure of 78.2% who fell into the high concern category, higher than results found in France ([19], 20.6%), England ([20], 19%) and Spain [14]. In the same study, a sample of Brazilian elderly participants revealed 66.5% to be in the high-concern category, significantly lower than the Portuguese results.

Regarding the possible relationship between the fear of falling and performance in intersegmental coordination tasks, Castro et al. [21] found, among other conclusions, that fear of falling was significantly associated with altered intra- and intersegmental coordination in Portuguese older adults. Badrasawi et al. [22] reported a significant association between fear of falling and dynamic balance in Palestinian community-dwelling older adults, and Thiamwong et al. [23], with a sample of American community-dwelling older adults, found a significant association between fear of falling and static balance. Though focused on a specific elderly population, Gülşen et al. [24] found that lower-extremity dexterity was an independent predictor of fall risk in People with Parkinson's disease.

Although the predictors strongly associated with falls are multifactorial and interactional in nature [25–27], finding an easy, quick, and economical measure to identify potential fallers would help researchers and practitioners better identify individuals who need a more comprehensive assessment [28].

The objective of the present study is to search for the existence of a correlation between fear of falling and eye–segmental (eye–hand and eye–foot) coordination in elderly participants. Additionally, differences between men and women on both variables will be analyzed.

2. Materials and Methods

2.1. Participants

The sample consisted of 94 older adults (73 women and 21 men), aged between 61 and 86 years (71.72 ± 5.64). All participants were enrolled in the community physical exercise programme "Mova Sénior" (Batalha Town Council), which includes two geriatric exercise sessions and one hydrogeriatric session per week (40 min each). This programme included four other women, who, being aged under 60, were excluded from the analyses,

considering elderly people to be individuals aged 60 years and above, as adopted by the United Nations World Assembly on Ageing in Vienna in 1982 [29] and reinforced in the UN 2030 agenda for sustainable development [30].

A post hoc sensitivity power analysis was conducted using G*Power (version 3.1.9.7) [31]. For the Mann–Whitney U test comparing women (n = 73) and men (n = 21), assuming a medium effect size (d = 0.5, two-tailed) and $\alpha = 0.05$, the achieved power was 0.76, reflecting the actual unbalanced group sizes. For the Spearman correlation analyses performed on the full sample (N = 94), with a medium effect size ($\rho = 0.3$) and $\alpha = 0.05$, power exceeded 0.80, which is conventionally considered adequate.

Regarding the exploratory sex-stratified correlations, we also examined power separately for women and men. For the female subsample (n = 73), power to detect a medium-sized correlation ($\rho = 0.3$, $\alpha = 0.05$) was >0.80. In contrast, for the male subsample (n = 21), power for the same effect size was only 0.23, indicating a high risk of Type II error. Therefore, any correlation observed in men must be interpreted with extreme caution and should be considered preliminary.

2.2. Procedures

Before collecting the data, an email was sent to the City Council responsible for the "Mova Sénior" programme (gerontomotricity programme) to request authorization to collect data for this study. After obtaining validation, we prepared a document explaining the procedures for conducting the tests and requesting the consent of the participants to take part in the study. All ethical guidelines established by the Declaration of Helsinki were rigorously followed, and the research protocol was cleared by the Ethics Committee of the Polytechnic of Leiria (reference: CE/IPLEIRIA/63/2024; approved 24 May 2024). A sociodemographic questionnaire was distributed to collect data on the participants, such as age, gender, marital status, length of time participating in the programme and the specific location where they participated in the programme. After completing the questionnaire, participants were scheduled to perform the International Fall Efficacy Scale [FES-I (PT)] and the Tripela Sports Test. The tests were administered during the gerontomotricity programme classes and were all completed over a period of two weeks.

2.3. Design

This is an observational and cross-sectional study, since the data were collected at a single point in time and no independent variables were manipulated.

2.4. Instruments

To measure fear of falling, Tinetti created a ten-item scale called the Falls Efficacy Scale (FES) [32]. In 2005, the International FES (FES-I) was released by Yardley et al. [33], with sixteen items, to represent a direct relationship between fear of falling and self-efficacy. In the present study, we are using the Portuguese validated translation of FES-I, the International Falls Efficacy Scale [FES-I (PT)] [34]. This test consists of 16 items, rated on a 4-point scale from 1 ('not worried') to 4 ('very worried'). Thus, results vary from 16 (no concern with falls) to 64 (extreme concern with falls).

To assess eye–segmental (eye–hand and eye–foot) coordination, we used the Tripela Sports Test (TST), following the protocol defined by Matos et al. [35], in which participants were asked to kick a ball against a wall as many times as possible in 30 s, following a drop punt kick movement pattern. Specifically, participants must release the ball they are holding and kick it towards the wall without it bouncing on the floor. Only ball touches on the wall with subsequent successful ball capture should be considered. A line marked on the floor two metres away from the wall must not be stepped on or crossed during the kick, for the impact to be considered valid. Participants could only enter the 2-m zone if

the ball remained there. Each participant was allowed five warm-up repetitions before performing two consecutive attempts, with 30 s of recovery between assessments, so that the best performance could be recorded. The test was performed with a size-5 football with a soft touch. The wall had a valid area 5 m wide, marked with vertical stripes, and over 4 m high (the minimum required).

2.5. Statistics

A descriptive analysis was performed using measures of central tendency and dispersion. The normality of all variables was tested to determine whether parametric or non-parametric tests should be applied. The non-parametric Mann–Whitney U test was used to compare groups (male vs. female). Effect sizes for this comparison were calculated as $r = Z/\sqrt{N}$, according to Rosenthal [36], and interpreted as small (0.10), medium (0.30), or large (0.50), following Cohen's [37] conventions. Associations between variables were evaluated using Spearman's rho correlation coefficient. The correlation magnitudes were interpreted following Hopkins et al. [38]: trivial ($\rho < 0.1$), small ($0.1 \leq \rho < 0.3$), moderate ($0.3 \leq \rho < 0.5$), large ($0.5 \leq \rho < 0.7$), very large ($0.7 \leq \rho < 0.9$), and perfect ($0.9 \leq \rho \leq 1$). All statistical analyses were performed using SPSS v.29.0.

3. Results

According to Table 1, there is a small, statistically significant negative correlation between TST and FES-I (PT) ($\rho = -0.254$, $p < 0.05$), when considering the global sample.

Table 1. Correlation (ρ) between TST and FES-I (PT).

Variables	n	ρ	*p*
Total sample 1. TST 2. FES-I (PT)	94	−0.254 *	0.013
Men 1. TST 2. FES-I (PT)	21	0.034	0.883
Women 1. TST 2. FES-I (PT)	73	−0.305 **	0.009

Note: * = $p < 0.05$; ** $p < 0.01$; TST = Tripela Sports Test (Gross Eye–Segmental Coordination Test); FES-I (PT) = Falls Efficacy Scale, Portuguese validated translation; ρ = Spearman's rho.

When analyzing data by sex, it is observable that, for women, the abovementioned significant and negative correlation persisted ($\rho = -0.305$, $p < 0.01$), registering an increase (from small to moderate) when compared with the general strength verified on the global sample.

Conversely, in the case of men, no association was found between the two variables.

According to the presented values in Table 2, men achieved significantly better results in TST than women (9.38 ± 4.70 vs. 4.67 ± 3.13, $p < 0.001$), with a medium effect size ($r = 0.45$). Regarding fear of falling, women had significantly higher scores (24.12 ± 7.24 vs. 21.38 ± 7.59, $p < 0.05$), with a small effect size ($r = 0.23$).

Table 2. Descriptive and comparative data between men and women on age, TST and FES-I(PT).

	n	Age Years Mean (SD)	TST Repetitions Mean (SD)	FES-I (PT) Points 16–64 Mean (SD)
Total Sample	94	71.72 (5.64)	5.72 (4.03)	23.51 (7.37)
Men	21	72.03 (4.35)	9.38 (4.70)	21.38 (7.59)
Women	73	71.63 (5.99)	4.67 (3.13)	24.12(7.24)
Mann–Whitney' U (Men vs. Women)		737.500	295.500	525.500
Z-value (Men vs. Women)		−0.170	−4.293	−2.196
p (Men vs. Women		0.865	<0.001 **	0.028 *
r (Men vs. Women)		-	0.45	0.23

Note: * = $p < 0.05$; ** = $p < 0.001$: TST = Tripela Sports Test (Gross Eye–Segmental Coordination Test); FES-I (PT) = Falls Efficacy Scale, Portuguese validated translation.; r = effect size.

4. Discussion

This study aimed to correlate fear of falling with oculo-segmental coordination in elderly participants engaged in a community physical exercise programme.

Practitioners who performed better on the TST presented less fear of falling, reflected in lower FES-I(PT) scores. This is in line with Rodrigues et al. [39], as older adults with greater agility/coordination had a lower risk of falling. According to the results of the present study, there was indeed a small negative correlation between these variables; i.e., older adults who performed better on the TST test tended to have lower FES-I(PT) scores, i.e., reported less fear of falling. However, as mentioned in the results, when analyzed by gender, this negative association proved to be significant only in the subsample of women. In this subsample, the strength of this association was higher (moderate rather than weak) when compared with the correlation found in the whole sample. This situation is closely related to the fact that, among men, this association did not prove to be statistically significant. It is possible that self-assessment of the fear of falling and performance on eye–segmental coordination tasks are related to one another differently in people of different sexes. Nevertheless, these analyses by gender should be taken cautiously, given the severe gender imbalance.

There were no previous data on older adults for the TST. However, the results of studies comparing TST results in boys and girls of different ages revealed that boys performed better [35,40,41]. Despite the significant age differences, it was expected in this study that men would have better results than women, which was confirmed as, on average, men performed more than twice as many repetitions as women.

It was also predictable that men would score lower on the FES-I (PT) test compared to women, since, as presented by Kempen et al. [42], women always score higher than men on this test. The results confirmed that men have less fear of falling than women.

Finally, 42.9% of the present sample scored 23 (out of 46) or more on the FES-I(PT), substantially lower than the 78.2% reported by Vitorino et al. [18] in a similar Portuguese sample. When considered by sex, men had a substantially lower percentage of participants (28,6%) reporting high concern than women (46.8%). These results seem to support the importance of maintaining regular physical activity, which was the case with the present sample.

Limitations and Future Studies

The present findings should be interpreted considering several limitations. First, the study relied on a convenience sample that was markedly unbalanced in terms of sex (77 women and 21 men). This severe disparity may have introduced selection bias and

limits the generalizability of the results to the male population. Second, although the overall sample size provided adequate power for the main correlational analyses (power > 0.80 for Spearman's ρ = 0.3), the comparison between sexes was constrained by the small number of men. The post hoc power analysis indicated a power of 0.76 to detect a medium-sized difference (d = 0.5) between women and men. This means that smaller, yet potentially relevant, sex differences might not have been detected. Consequently, any non-significant differences between sexes should not be taken as evidence of equivalence. Third, the exploratory sex-stratified correlations were severely limited on the male side: while power for detecting a medium correlation (ρ = 0.3) exceeded 0.80 in the female subsample (n = 77), it was only 0.23 in the male subsample (n = 21). Thus, the male-specific correlations are highly unreliable and should be regarded purely as hypothesis-generating. Relatedly, the sex-specific effect estimates for men carry considerable uncertainty and should not be overinterpreted. Future studies would benefit from employing balanced, representative samples to validate and extend these results, particularly with regard to possible sex-related patterns. Finally, the cross-sectional nature of the study does not allow for robust conclusions to be drawn, as would be the case in a longitudinal study. It would be interesting, in future studies, to have a group of elderly people undergoing a programme using manipulative and eye–segmental coordination exercises similar to the TST task to verify whether, in parallel, the fear of falling would decrease with the possible improvement in TST.

5. Conclusions

The results of this study revealed that there was a negative correlation between fear of falling and eye–segmental coordination in Portuguese elderly participants who were enrolled in a community physical exercise programme. When observed by gender, this significant correlation was only present in the female subsample. Furthermore, although these findings should be treated with caution given that there were significantly more women than men in the study, men performed significantly better on the TST and showed less fear of falling than women.

Author Contributions: D.D., M.J., F.R., D.M., L.C. and R.M.: Conceptualization, Methodology, Software. D.D., M.J. and D.M.: Data curation, Writing—Original draft preparation. N.A., R.A., R.M., R.C., D.D., L.C. and J.C.: Visualization, Investigation. M.J., L.C., N.A., R.A. and R.M.: Supervision. L.C. and R.M.: Software, Validation. M.J., N.A., R.A., R.M., R.C., L.C., J.C., F.R. and D.M.: Writing—Reviewing and editing. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by National Funds by the FCT—Foundation for Science and Technology—under the projects UID/04045/2025 (https://doi.org/10.54499/UID/04045/2025), UID/PRR/04045/2025 (https://doi.org/10.54499/UID/PRR/04045/2025) and UID/PRR2/04045/2025 (https://doi.org/10.54499/UID/PRR2/04045/2025).

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the Polytechnic of Leiria (protocol code CE/IPLEIRIA/63/2024; 24 May 2024).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

References

1. Warburton, D.E.R.; Bredin, S.S.D. Health Benefits of Physical Activity: A Strengths-Based Approach. *J. Clin. Med.* **2019**, *8*, 2044. [CrossRef] [PubMed]
2. Gallardo-Gómez, D.; Del Pozo-Cruz, J.; Noetel, M.; Álvarez-Barbosa, F.; Alfonso-Rosa, R.M.; Del Pozo Cruz, B. Optimal Dose and Type of Exercise to Improve Cognitive Function in Older Adults: A Systematic Review and Bayesian Model-Based Network Meta-Analysis of RCTs. *Ageing Res. Rev.* **2022**, *76*, 101591. [CrossRef] [PubMed]
3. Oliveira, B.R.R.; Matos, I.C.; Neto, G.M.; Rodrigues, F.; Monteiro, D.; Lattari, E.; Machado, S. A 16-Week Intervention on Mood and Life Quality in Elderly: Testing Two Exercise Programs. *Cuad. Psicol. Deporte* **2021**, *21*, 24–31. [CrossRef]
4. Rikli, R.E.; Jones, C.J. Development and Validation of Criterion-Referenced Clinically Relevant Fitness Standards for Maintaining Physical Independence in Later Years. *Gerontologist* **2013**, *53*, 255–267. [CrossRef] [PubMed]
5. Monteiro, A.M.; Forte, P.; Carvalho, J.; Barbosa, T.M.; Morais, J.E. Relationship between Fear of Falling and Balance Factors in Healthy Elderly Women: A Confirmatory Analysis. *J. Women Aging* **2021**, *33*, 57–69. [CrossRef] [PubMed]
6. Granacher, U.; Gollhofer, A.; Hortobágyi, T.; Kressig, R.W.; Muehlbauer, T. The Importance of Trunk Muscle Strength for Balance, Functional Performance, and Fall Prevention in Seniors: A Systematic Review. *Sports Med.* **2013**, *43*, 627–641. [CrossRef] [PubMed]
7. Nùñez-Lisboa, M.; Valero-Breton, M.; Dewolf, A.H. Unraveling Age-Related Impairment of the Neuromuscular System: Exploring Biomechanical and Neurophysiological Perspectives. *Front. Physiol.* **2023**, *14*, 1194889. [CrossRef] [PubMed]
8. American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription*, 11th ed.; Wolters Kluwer: Philadelphia, PA, USA, 2021.
9. Ramsey, K.A.; Zhou, W.; Rojer, A.G.M.; Reijnierse, E.M.; Maier, A.B. Associations of Objectively Measured Physical Activity and Sedentary Behaviour with Fall-Related Outcomes in Older Adults: A Systematic Review. *Ann. Phys. Rehabil. Med.* **2022**, *65*, 101571. [CrossRef] [PubMed]
10. Oikawa, S.Y.; Holloway, T.M.; Phillips, S.M. The Impact of Step Reduction on Muscle Health in Aging: Protein and Exercise as Countermeasures. *Front. Nutr.* **2019**, *6*, 75. [CrossRef] [PubMed]
11. Asai, T.; Oshima, K.; Fukumoto, Y.; Yonezawa, Y.; Matsuo, A.; Misu, S. The Association between Fear of Falling and Occurrence of Falls: A One-Year Cohort Study. *BMC Geriatr.* **2022**, *22*, 393. [CrossRef] [PubMed]
12. Scheffer, A.C.; Schuurmans, M.J.; van Dijk, N.; van der Hooft, T.; de Rooij, S.E. Fear of Falling: Measurement Strategy, Prevalence, Risk Factors and Consequences among Older Persons. *Age Ageing* **2008**, *37*, 19–24. [CrossRef] [PubMed]
13. Kwan, M.M.-S.; Close, J.C.T.; Wong, A.K.W.; Lord, S.R. Falls Incidence, Risk Factors, and Consequences in Chinese Older People: A Systematic Review. *J. Am. Geriatr. Soc.* **2011**, *59*, 536–543. [CrossRef] [PubMed]
14. Lavedán, A.; Viladrosa, M.; Jürschik, P.; Botigué, T.; Nuín, C.; Masot, O.; Lavedán, R. Fear of Falling in Community-Dwelling Older Adults: A Cause of Falls, a Consequence, or Both? *PLoS ONE* **2018**, *13*, e0194967. [CrossRef] [PubMed]
15. Even-Zohar, A.; Kreitler, S.; Guterman, H.G. Falls of Older Adults: Which Is Worse, Falling or Fear of Falling? *J. Ageing Longev.* **2025**, *5*, 20. [CrossRef]
16. Liu, M.; Hou, T.; Li, Y.; Sun, X.; Szanton, S.L.; Clemson, L.; Davidson, P.M. Fear of Falling Is as Important as Multiple Previous Falls in Terms of Limiting Daily Activities: A Longitudinal Study. *BMC Geriatr.* **2021**, *21*, 350. [CrossRef] [PubMed]
17. Delbaere, K.; Close, J.C.T.; Mikolaizak, A.S.; Sachdev, P.S.; Brodaty, H.; Lord, S.R. The Falls Efficacy Scale International (FES-I). A Comprehensive Longitudinal Validation Study. *Age Ageing* **2010**, *39*, 210–216. [CrossRef] [PubMed]
18. Vitorino, L.M.; Marques-Vieira, C.; Low, G.; Sousa, L.; Cruz, J.P. Fear of Falling among Brazilian and Portuguese Older Adults. *Int. J. Older People Nurs.* **2019**, *14*, e12230. [CrossRef] [PubMed]
19. Ayoubi, F.; Launay, C.P.; Kabeshova, A.; Fantino, B.; Annweiler, C.; Beauchet, O. The Influence of Fear of Falling on Gait Variability: Results from a Large Elderly Population-Based Cross-Sectional Study. *J. Neuroeng. Rehabil.* **2014**, *11*, 128. [CrossRef] [PubMed]
20. Kumar, A.; Carpenter, H.; Morris, R.; Iliffe, S.; Kendrick, D. Which Factors Are Associated with Fear of Falling in Community-Dwelling Older People? *Age Ageing* **2014**, *43*, 76–84. [CrossRef] [PubMed]
21. Castro, M.; Moreira, J.; Sousa, A.S.P. Association Between Gait Lower Limb Intra and Interlimb Coordination and Fear of Falling and Falling History in Older Adults. *Symmetry* **2025**, *17*, 818. [CrossRef]
22. Badrasawi, M.; Hamdan, M.; Vanoh, D.; Zidan, S.; ALsaied, T.; Muhtaseb, T.B. Predictors of Fear of Falling among Community-Dwelling Older Adults: Cross-Sectional Study from Palestine. *PLoS ONE* **2022**, *17*, e0276967. [CrossRef] [PubMed]
23. Thiamwong, L.; Xie, R.; Conner, N.E.; Renziehausen, J.M.; Ojo, E.O.; Stout, J.R. Body Composition, Fear of Falling and Balance Performance in Community-Dwelling Older Adults. *Transl. Med. Aging* **2023**, *7*, 80–86. [CrossRef] [PubMed]
24. Gülşen, Ç.; Keskin, A.O.; Gülşen, E.Ö.; Söke, F. The Relationships between Lower-Extremity Dexterity and Fall Risk, Fear of Falling, and Walking Skills in People with Parkinson's Disease. *Ir. J. Med. Sci.* **2026**. [CrossRef] [PubMed]
25. Rubenstein, L.Z.; Robbins, A.S. Falls in the Elderly: A Clinical Perspective. *Geriatrics* **1984**, *39*, 67–71, 75–76, 78. [CrossRef] [PubMed]

26. Tinetti, M.E.; Williams, T.F.; Mayewski, R. Fall Risk Index for Elderly Patients Based on Number of Chronic Disabilities. *Am. J. Med.* **1986**, *80*, 429–434. [CrossRef] [PubMed]
27. Woollacott, M.H. Editorial: Systems Contributing to Balance Disorders in Older Adults. *J. Gerontol. A Biol. Sci. Med. Sci.* **2000**, *55*, M424–M428. [CrossRef] [PubMed]
28. Montero-Odasso, M.; van der Velde, N.; Martin, F.C.; Petrovic, M.; Tan, M.P.; Ryg, J.; Aguilar-Navarro, S.; Alexander, N.B.; Becker, C.; Blain, H.; et al. World Guidelines for Falls Prevention and Management for Older Adults: A Global Initiative. *Age Ageing* **2022**, *51*, afac205. [CrossRef] [PubMed]
29. United Nations. *Vienna International Plan of Action on Ageing*; United Nations: New York, NY, USA, 1982.
30. United Nations; Department of Economic and Social Affairs; Population Division. *World Population Prospects: The 2017 Revision, Key Findings and Advance Tables*; United Nations: New York, NY, USA, 2017.
31. Faul, F.; Erdfelder, E.; Buchner, A.; Lang, A.-G. Statistical Power Analyses Using G*Power 3.1: Tests for Correlation and Regression Analyses. *Behav. Res. Methods* **2009**, *41*, 1149–1160. [CrossRef] [PubMed]
32. Tinetti, M.E.; Richman, D.; Powell, L. Falls Efficacy as a Measure of Fear of Falling. *J. Gerontol.* **1990**, *45*, 239–243. [CrossRef] [PubMed]
33. Yardley, L.; Beyer, N.; Hauer, K.; Kempen, G.; Piot-Ziegler, C.; Todd, C. Development and Initial Validation of the Falls Efficacy Scale-International (FES-I). *Age Ageing* **2005**, *34*, 614–619. [CrossRef] [PubMed]
34. Marques-Vieira, C.M.A.; de Sousa, L.M.M.; de Sousa, L.M.R.; Berenguer, S.M.A.C. Validation of the Falls Efficacy Scale—International in a sample of Portuguese elderly. *Rev. Bras. Enferm.* **2018**, *71*, 747–754. [CrossRef] [PubMed]
35. Matos, R.; Monteiro, D.; Rebelo-Gonçalves, R.; Coelho, L.; Salvador, R.; Antunes, R.; Mendes, D.; Amaro, N. Wall Drop Punt Kick & Catch: Contributions towards the Creation of a New Gross Manipulative Coordination Test. *Int. J. Sports Sci. Coach.* **2022**, *17*, 590–598. [CrossRef]
36. Rosenthal, R. Parametric Measures of Effect Size. In *The Handbook of Research Synthesis*; Russell Sage Foundation: New York, NY, USA, 1994; pp. 231–244.
37. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed.; Routledge: New York, NY, USA, 1988.
38. Hopkins, W.G.; Marshall, S.W.; Batterham, A.M.; Hanin, J. Progressive Statistics for Studies in Sports Medicine and Exercise Science. *Med. Sci. Sports Exerc.* **2009**, *41*, 3–13. [CrossRef] [PubMed]
39. Rodrigues, F.; Domingos, C.; Monteiro, D.; Morouço, P. A Review on Aging, Sarcopenia, Falls, and Resistance Training in Community-Dwelling Older Adults. *Int. J. Environ. Res. Public Health* **2022**, *19*, 874. [CrossRef] [PubMed]
40. Matos, R.; Amaro, N.; Lopes, N.; Costa, P.; Jacinto, M.; Rodrigues, F.; Antunes, R.; Coelho, L.; Ibáñez, S.J.; Estevan, I.; et al. Exploring the Relationship Between Wall Drop Punt Kick and Catch (Tripela Sports) Performance and Manipulative Tests of the Motor Competence Assessment Battery in Early Adolescents. *Meas. Phys. Educ. Exerc. Sci.* **2025**, *29*, 327–335. [CrossRef]
41. Matos, R.; Amaro, N.; Lopes, N.; Jacinto, M.; Antunes, R.; Coelho, L.; Ibáñez, S.J.; Estevan, I.; Menescardi, C.; Monteiro, D. Wall Drop Punt Kick and Catch (Tripela) Test: More Than Just a Measure of Gross Manipulative Coordination. *Meas. Phys. Educ. Exerc. Sci.* **2026**, *30*, 142–152. [CrossRef]
42. Kempen, G.I.J.M.; Todd, C.J.; Van Haastregt, J.C.M.; Zijlstra, G.A.R.; Beyer, N.; Freiberger, E.; Hauer, K.A.; Piot-Ziegler, C.; Yardley, L. Cross-Cultural Validation of the Falls Efficacy Scale International (FES-I) in Older People: Results from Germany, the Netherlands and the UK Were Satisfactory. *Disabil. Rehabil.* **2007**, *29*, 155–162. [CrossRef] [PubMed]