(C)

: < 1900 - /); (: < 4 / , : 4–4.4 / , : 4.5–5 / , : > 5 /); (: < 3, : = 3, : = 4–5, : > 5); (: < 5, : = 5, : = 6–8, : > 8).

Conclusions: A [illegible]

Keywords: [illegible]

Background

Falls are a problem for older adults, caregivers, society,

Methods

Participants

Participants were independent community-dwelling Por-

Table 1 (= 500)

	1st P	25th P	50th P	75th P	99th P	OR (95%CI)
( )	7	13	15	18	30	0.965 (0.954–0.976)
( )	6	13	17	20	29	0.969 (0.959–0.980)
( )	−32.0	−8.0	0.0	3.0	18.5	1.010 (0.991–1.029)
( )	−37.0	−18.0	−10.0	−2.0	13.0	0.975 (0.959–0.992)
A ( )	3.9	5.1	5.7	6.6	12.2	1.182 (1.049–1.331)
A ( )	240	438	499	550	714	0.997 (0.995–0.999)
( )	12	28	32	35	40	0.939 (0.910–0.968)
B (.)	44.9	61.0	68.6	77.4	108.1	0.997 (0.983–1.012)
B ( )	137.0	150.0	155.9( )17.7( )100)			

from multivariate binary logistic regression modelli[redacted] the following:

$$\pi(x) = \frac{\mathrm{esp}(-0.053B - 0.026L + 0.027F - 0.012TPA + 0.034VPA \text{[redacted]} .112HC + 0.063H)}{1 + \mathrm{esp}(-0.053B - 0.026L + 0.027BFM\% - 0.012TPA + 0 \text{[redacted]} .125R + 0.112HC + 0.063H)}$$

Where π (x) is the [redacted]ility of falling, exp. is exponential; B is multi[redacted]sional balance score (point); L is lean body ma[redacted], F is fat body mass (%); TPA is total physical [redacted] (100 METmin/wk); VPA is vigorous intensit[redacted]sical activity (100 MET-min/wk); R is the Rest [redacted] (hr/day); HC is the number of health conditions; [redacted] H is the number of environmental hazards.

The results illustrated in Table 2 show that for each additional point performed on the multidimensional balance score, the likelihood of falling decreases by 5.1%; for each additional kilo on lean mass body mass, the likelihood of falling drops by 2.6%; and for each additional 100 MET-min/wk. spent on total physical activity, the likelihood of falling decreases by 1.2%. For each additional 1% fat body mass, the likelihood of falling increases by 2.7% for each additional 100 MET-min/wk. spent on vigorous physical activity, the likelihood of falling increases by 3.5%; for each additional hr./day rest period weekdays, this likelihood increases by 13.3%; for each additional health condition, the likelihood of falling increases by 11.9%; and for each additional environmental hazard, this likelihood increases by 6.5%. These relationships are not dependent on age or sex since these two variables were not selected as significantly explaining the occurrence of falls in multivariate analysis. Finally, the model built by the multivariate analysis (and the respective equation) shows that a better outcome in one key risk factor may outweigh another weaker outcome on another key risk factor.

The Hosmer and Lemeshow goodness-of-fit test of the multivariate model was not significant ($p = 0.985$). The AUC was 0.710 (95% CI: 0.663–0.756), and the cutoff point maximizing specificity and sensitivity (64.0 and 69.4%, respectively) was 0.35939 (~ 35.9%). The AUC computed by cross-validation was 0.659 (CI 95%: 0.610–0.708).

Figure 1 illustrates the fall risk stratification according to the cutoff values computed for the outcomes of the key risk factors' explaining fall occurrence (using multivariate binary regression modelling, ROC curves, and AUC analyses as explained in Methods).

Therefore, the variables on which an increase in the result corresponded to a decrease in the likelihood of falling, that is, multidimensional balance, lean mass body mass, and total physical activity - the cutoffs of π: 0.25, π: 0.35939 and π: 0.50 (used to stratify the risk of falling) cor-

Regarding the vigorous physical activity risk factor, as the 42nd, 55th, and 69th percentiles are equal to 0 MET-min/wk., the respective cutoffs and reference values are not shown in Fig. 1. Indeed, data showed that, concerning vigorous physical activity, only participants above the 80th percentile performed this kind of activity. The results of the multivariate binary regression showed that vigorous physical activity was positively associated with the risk of falling, especially when other key factors' outcome results indicated high risk.

Discussion

The present study assessed physical fitness, body composition, physical activity, health condition, and environmental hazard fall risk factors, aiming to identify the key risk factor outcomes and to establish their cutoff values for high-low risk. Hence, the present study established the outcome cutoffs and respective interval values for which the identified key risk factors indicate "low", "moderate", or "high" risk of falling, as recommended by the Centers for Disease Control and Prevention [32], or even " high, and very high risk may be particularly valuable for designing effective approaches to fall prevention [15]. In particular, the established cutoffs enable quantification of how much each assessed older adult should improve on the identified risk factor/outcome to change from a

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