Background: The prevention of falls among older people is a major public health challenge. Exercises that challenge balance are recognized as an efficacious fall prevention strategy. Given that small-scale trials have indicated that diverse dance styles can improve balance and gait of older adults, two of the strongest risk factors for falls in older people, this study aimed to determine whether social dance is effective in i) reducing the number of falls and ii) improving physical and cognitive fall-related risk factors.

Methods and findings: A parallel two-arm cluster randomized controlled trial was undertaken in 23 self-care retirement villages (clusters) around Sydney, Australia. Eligible villages had to have an appropriate hall for dancing, house at least 60 residents, and not be currently offering dance as a village activity. Retirement villages were randomised using a computer generated randomisation method, constrained using minimisation. Eligible participants had to be a resident of the village, be able to walk at least 50 m, and agree to undergo physical and cognitive testing without cognitive impairment. Residents of intervention villages (12 clusters) were offered twice weekly one-hour social dancing classes (folk or ballroom dancing) over 12 mo (80 h in total). Programs were standardized across villages and were delivered by eight dance teachers. Participants in the control villages (11 clusters) were advised to continue with their regular activities.

Main outcomes: falls during the 12 mo trial and Trail Making Tests. Secondary outcomes: The Physiological Performance Assessment (i.e., postural sway, proprioception, reaction time, leg strength) and the Short Physical Performance Battery; health-related physical and mental quality of life from the Short-Form 12 (SF-12) Survey. Data on falls were obtained from 522 of 530 (98%) randomised participants (mean age 78 y, 85% women) and 424 (80%) attended the 12-mo reassessment, which was lower among folk dance participants (71%) than ballroom dancing (82%) or control participants (82%, p = 0.04). Mean attendance at dance classes was 51%. During the period, 444 falls were recorded; there was no significant difference in fall rates between the control group (0.80 per person-year) and the dance group (1.03 per person-year). Using negative binomial regression with robust standard errors the adjusted Incidence Rate Ratio (IRR) was 1.19 (95% CI: 0.83, 1.71). In exploratory post hoc subgroup analysis, the rate of falls was higher among dance participants with a history of multiple falls (IRR = 2.02, 95% CI: 1.15, 3.54, p = 0.23 for interaction) and with the folk dance intervention (IRR = 1.68, 95% CI: 1.03, 2.73). There were no significant between-group differences in executive function test (TMT-B = 2.8 s, 95% CI: -6.2, 11.8). Intention to treat (ITT) analysis revealed no between-group differences at 12-mo follow-up in the secondary outcome measures, with the exception of postural sway, favouring the control group. Exploratory post hoc analysis by study completers and style indicated that ballroom dancing participants apparently improved their gait speed by 0.07 m/s relative to control participants (95% CI: 0.00, 0.14, p = 0.05). Study limitations included allocation to style based on logistical considerations rather than at random; insufficient power to detect differential impacts of different dance styles and smaller overall effects; variation of measurement conditions across villages; and no assessment of more complex balance tasks, which may be more sensitive to changes brought about by dancing. Conclusions: Social dancing did not prevent falls or their associated risk factors among these retirement villages’ residents. Modified dance programmes that contain ‘‘training elements’’ to better approximate structured exercise programs, targeted at low and high-risk participants, warrant investigation. TRIAL REGISTRATION: The Australian New Zealand Clinical Trials Registry ACTRN12612000889853.